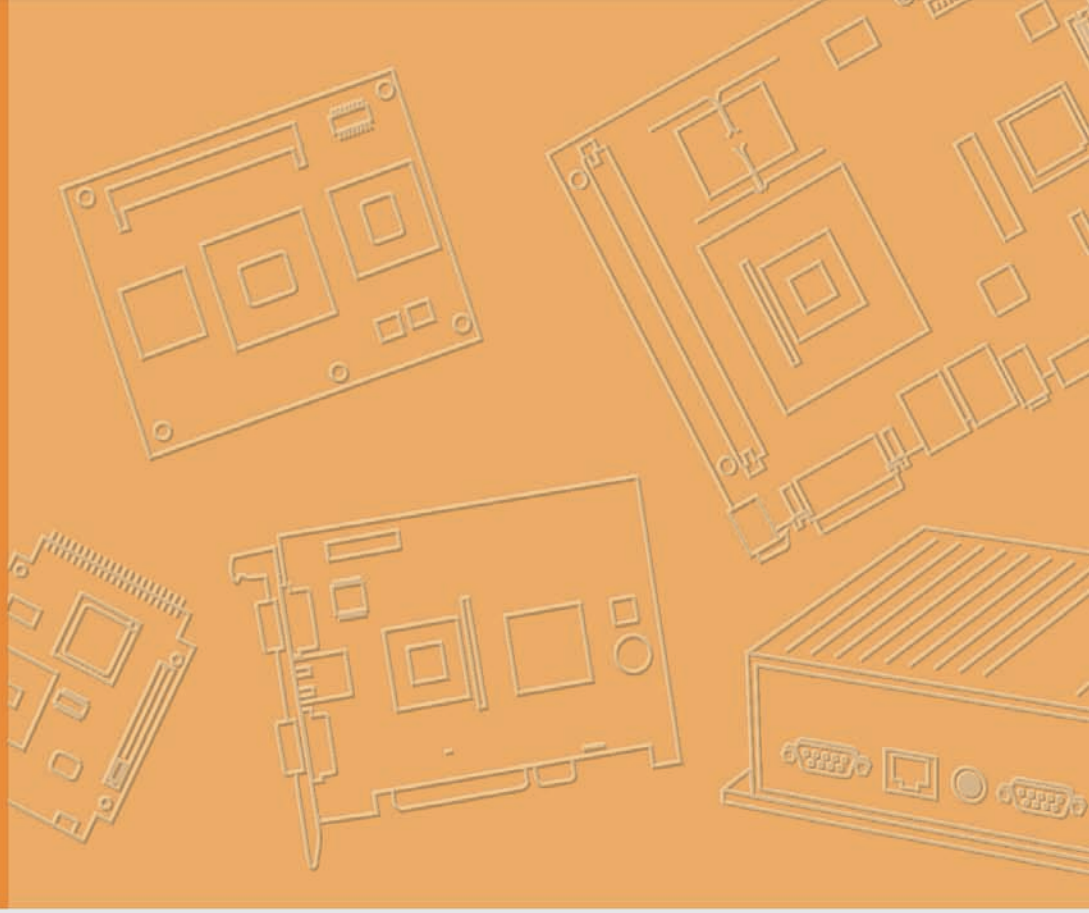

User Manual

TREK-753

7" All-in-one Mobile Data Terminal

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Because of Advantech's high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. Please consult your dealer for more details.

If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. (For example, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any onscreen messages you get when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
3. If your product is diagnosed as defective, obtain an RMA (return merchandise authorization) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

Part No. Edition 1

Printed in Taiwan April 2012

Declaration of Conformity

CE

This product has passed the CE test for environmental specifications. Test conditions for passing included the equipment being operated within an industrial enclosure. In order to protect the product from being damaged by ESD (Electrostatic Discharge) and EMI leakage, we strongly recommend the use of CE-compliant industrial enclosure products.

FCC Class B

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 FCC Rules.

Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and

(2) this device must accept any interference received, including interference may cause undesired operation.

Technical Support and Assistance

1. Visit the Advantech web site at http://support.advantech.com where you can find the latest information about the product.
2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:
   - Product name and serial number
   - Description of your peripheral attachments
   - Description of your software (operating system, version, application software, etc.)
   - A complete description of the problem
   - The exact wording of any error messages

Warnings, Cautions and Notes

Warning! *Warnings indicate conditions, which if not observed, can cause personal injury!*

Caution! *Cautions are included to help you avoid damaging hardware or losing data. e.g.*

There is a danger of a new battery exploding if it is incorrectly installed. Do not attempt to recharge, force open, or heat the battery. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

Note! *Notes provide optional additional information.*

Document Feedback

To assist us in making improvements to this manual, we would welcome comments and constructive criticism. Please send all such - in writing to: support@advantech.com

Packing List

Before setting up the system, check that the items listed below are included and in good condition. If any item does not accord with the table, please contact your dealer immediately.

- TREK-753 series Mobile Data Terminal
- USB/LAN cable clip
- Warranty card
- Power cord: DC power inlet cable (200 cm - for TREK-753 only)
- WWAN or WLAN Antennas (by options)
- “Drivers, Utilities and User Manual" CD-ROM
- End User License Agreement (WES and WinCE model), please download driver and related document from http://support.advantech.com

Ordering Information

Part Number	Description
TREK-753R-0A0E	TREK-753R Bare bone with Z510PT 1.1GHz CPU
TREK-753R-1A0E	TREK-753R Bare bone with Z520PT 1.3GHz CPU
TREK-753S-0A0E	TREK-753R Bare bone with 1.1G CPU/Sunlight readable touch screen
TREK-753R-CWBXPA0E	TREK-753R w/CDMA/GPS/WLAN/BT/1GB RAM/4G CF/WES
TREK-753R-HWBXPA0E	TREK-753R w/HSDPA/GPS/WLAN/BT/1GB RAM/4G CF/WES
TREK-753R-GWBXPA0E	TREK-753R w/GPRS/GPS/WLAN/BT/1GB RAM/4G CF/WES

Safety Instructions

1. Read these safety instructions carefully.
2. Keep this User Manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall may cause damage.
7. Do not leave this equipment in an environment where the storage temperature is under -30° C (-22° F) or above 60° C (140° F); it may damage the equipment.
8. Do not operate this equipment in an environment temperature may over 50° C (122° F). The surface temperature of metal chassis may be scorched or hot.
9. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
10. Position the power cord so that people cannot step on it. Do not place anything over the power cord.The voltage and current rating of the cord should be greater than the voltage and current rating marked on the product.
11. All cautions and warnings on the equipment should be noted.
12. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
14. If one of the following situations arises, get the equipment checked by service personnel:
    - The power cord or plug is damaged.
    - Liquid has penetrated into the equipment.
    - The equipment has been exposed to moisture.
    - The equipment does not work well, or you cannot get it to work according to the user's manual.
    - The equipment has been dropped and damaged.
    - The equipment has obvious signs of breakage.
15. This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

    (1) this device may not cause harmful interference, and

    (2) this device must accept any interference received, including interference that

may cause undesired operation.

16. CAUTION: Always completely disconnect the power cord from your chassis whenever you work with the hardware. Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges.
17. CAUTION: Always ground yourself to remove any static charge before touching the motherboard, backplane, or add-on cards. Modern electronic devices are very sensitive to static electric charges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components on a static-dissipating surface or in a static-shielded bag when they are not in the chassis.
18. CAUTION: Any unverified component could cause unexpected damage. To ensure the correct installation, please always use the components (ex. screws) provided with the accessory box.

Safety Precaution - Static Electricity

Follow these simple precautions to protect yourself from harm and the products from damage.

- To avoid electrical shock, always disconnect the power from your system chassis before you work on it. Don't touch any components on the main board or other cards while the system is on.
- Disconnect power before making any configuration changes. A sudden power surge as you connect a jumper or install a card may damage sensitive electronic components.

Warning!

1. *Input voltage rated: 6 ~ 36 Vdc (12/24V power) or 18 ~ 58 Vdc (48V power, option).*
2. *Transport: carry the unit with both hands and handle with care.*
3. *Maintenance: to properly maintain and clean the surfaces, use only approved products or clean with a dry applicator.*
4. *CF/SD/SIM card: Turn off the power before inserting or removing CompactFlash storage cards.*

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B.1 EWF (Enhanced Write Filter) Manager SOP 56

Chapter 1

General Information

This chapter gives background information on the TREK-753 Mobile Data Terminal.

Sections include:

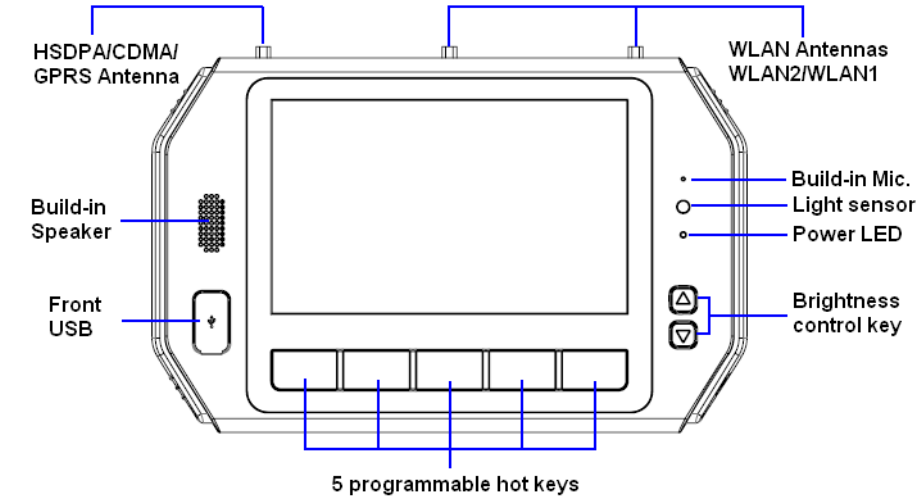
- **Introduction**
- **General Specifications**
- **Dimensions**

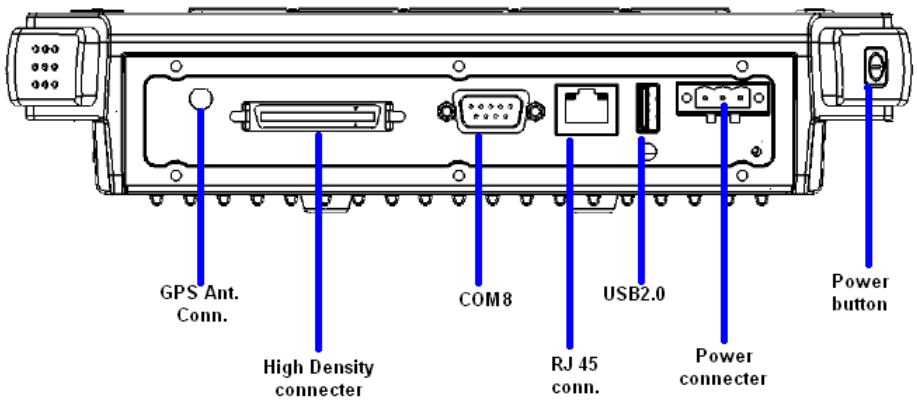
1.1 Introduction

Advantech-DLoG's TREK-753 is a new generation, all-in-one 7" mobile data terminal with touchscreen. Its compact and rugged industrial design is perfect for different uses where space, vibration, transient power, and temperature fluctuations will damage most computer equipment. TREK-753 is the higher performing cousin of the award-winning TREK-743 with its Intel® Atom™ Z510PT/US15 processor, increased memory, the addition of an analog video input port, GbE LAN, and a rich complement of I/O ports (additional COM ports, audio, CAN bus, and J1708). TREK-753 has also been re-engineered to optimize internal space, gained by its full-flat panel touchscreen; and it has moved the CF/SD/SIM card slot to make it externally accessible, allowing easy access without having to open the unit.

TREK-753 is built tough. It has an EN 60721-3-5 certification, and meets military standards for vibration and shock. This ruggedness allows TREK to boldly go where others dare not, opening a wide range of vertical market applications. TREK-753 is suitable for taxi and bus transport, in vehicle fleets of all types, in long-haul trucking, and as an affordable solution to heavy duty applications. TREK-753 is designed to operate flawlessly in transient power conditions. It supports 12/24 V options, operating from 6 ~ 36 volts, and it is ISO7637-2 and SAEJ1113 compliant. With power-on/power-off delay features which are software configurable, TREK holds its own in unstable power conditions. And TREK can operate in the temperature extremes found in harsh environments.

I/O Connectors





1.2 General Specifications

Key Features

- 7" WVGA LCD with 5 programmable, adjustable brightness hot keys
- Support Windows Embedded System(W.E.S.), WinCE6.0 and Ubuntu Linux
- Analog video input, J1708 & CAN2.0b with J1939 protocol supported
- Supports CDMA/HSDPA/GPRS, GPS, WLAN, BT wireless communications
- 12V/24V option: 6~36V input range compliant with IOS7637-2 & SAE J1113 standards
- 48V option: 18~58V input range for specific applications
- Fanless and ruggedized aluminum chassis, able to work in -30° C ~ 60° C
- IP54 rating for the entire system, giving protection in harsh environments subject to shock and vibration (Passed EN60721-3-5 5M3 Shock/vibration 100G/4G test).

Specifications

- **Dimensions:** (W x H x D) - 255.7 x 161 x 56 mm (10.04" x 6.30" x 2.20")
- **Weight:** 2.2 kg (max.)
- **Power features:**
  - Input voltage: 6 ~ 36 Vdc, supports ignition cold crank
  - Supports Ignition on/off
  - Supports low battery shut-down protection threshold (optional)
  - Supports power off event delay
  - Supports power on delay
  - Supports power low delay
  - Supports power low hard delay
  - Supports hard off delay
- **CPU/Chipset:** Industrial Intel Atom Z5XX 1.1GHz /1.33GHz (optional)
- **Chipset:** On board Intel LE82US15EE
- **OS:** Windows Embedded System(W.E.S.), WinCE6.0 and Ubuntu Linux
- **RAM:** One 200-pin SODIMM socket, Supports up to 2 GB DDR2 400/533
- **Storage:**
  - 1 x SD card with external access (not for boot device)
  - 1 x external accessible type II Compact Flash memory card only (boot device)
  - 1 x SIM card socket for GPRS/HSDPA
- **LCD:** Display Type 7" 16:9 industrial degree TFT LCD, 800x480 resolution LED backlight.
- **Touchscreen:** Type 4-wire Analog resistive, continuous resolution, optional support for sunlight readable TS display
- **I/O Functions:**
  - 1 x video input port for rear view monitor (Note: bypasses video to screen, does not support video recording)
  - 1 x RS-232 COM port from rear I/O; 1 x RS-232 COM port; 1 x RS-485 port with high density connector.
  - 1 x USB 2.0 port from front panel; 1 x USB 2.0 port from rear I/O; 1x USB 2.0 with high density connector
  - 1 x 100/1000-T Gb LAN by RJ-45 connector
  - 1 x CAN 2.0B with J1939 protocol with high density connector
  - 1 x J1708 with high density connector

- 1 x built-in 2.0w speaker and 1 x built-in microphone in front panel
- 1 x Line-in/Line-out/Mic-in interface with high density connector or switch to high density connector (via software)
- 5 x green lighted, programmable function keys, 2 x for LCD brightness control
- 1x light sensor on front cover for auto LCD brightness control
- 4 x isolated DI & 4 x isolated DO connectors

- **RF Functions:**
- GPS:Built-in uBlox LEA-5S GPS module with external antenna in I/O plate
- Bluetooth: Built-in Class 2 Bluetooth V2.0 + EDR module
- WWAN:
  - GPRS module; Cinterion MC55i with SMA type antenna
  - HSDPA module; Sierra wireless MC8790V with SMA type connector
  - CDMA module; Sierra wireless MC5728V with SMA type connector
- **WLAN:** Built-in 802.11b/g/n module with SMA type connector
- **Power Supply:**
  - Input Voltage 12V/24V option supports 6~36 V power design with ISO7637-2 & SAE J1113 compliant
  - 48v option support 18~58V input for specific application (Optional)
- **Mechanical Design:**
  - Aluminum chassis, optional, to support entire system IP54 rating with an extended I/O cover
  - Weight- under 2.2 kg (~4.85 lbs)
  - Dimensions (W x H x D) - 255.7 x 161 x 56 mm (10.04" x 6.30" x 2.20")
- **Environmental Specifications:**
  - Operating Temperature : -30° C ~ 50° C
  - Relative Humidity 95% @ 40° C (No condensing)
  - Vibration & Shock: MIL-STD-810G (US highway truck), Method 516.5,
  - SAE J1455, Class 5M3 according DIN EN 60721-3-5 (Lv.2 100G, 6ms, shock)

1.3 Dimensions

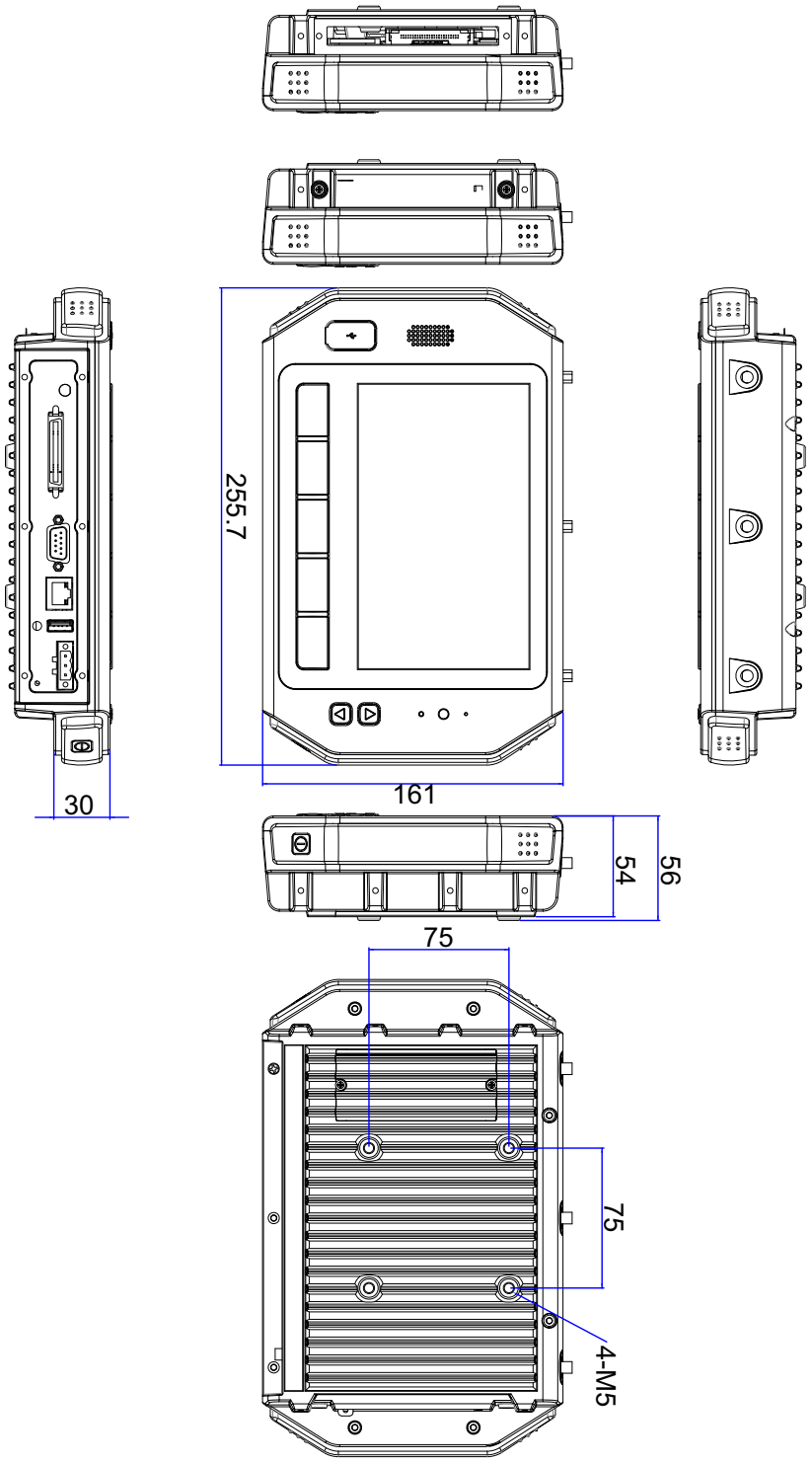


Figure 1.1 TREK-753 Dimensions

Chapter 2

System Setup

This chapter details system setup for TREK-753.

Sections include:

- **A Quick Tour of the Mobile Data Terminal**
- **Installation Procedures**
- **Running the BIOS Setup Program**
- **Installing the Drivers for Win XP**

2.1 A Quick Tour of the TREK-753 Mobile Data Terminal

Before starting to set up the Mobile Data Terminal, take a moment to become familiar with the locations and functions of the controls, drives, connectors and ports, which are illustrated in the figures below. When the Mobile Data Terminal is placed inside truck glove cabinet or under the passenger's seat next to the driver, its front appears as shown in Figure 2.1.

Figure 2.1 Front View of TREK-753

Figure 2.2 Rear View of TREK-753

Figure 2.3 Side View of TREK-753

Figure 2.4 Bottom View of TREK-753

2.2 Installation Procedures

When you install TREK-753, the first step is to connect the power and ignition correctly. TREK-753's power cable is designed to connect to the battery directly. TREK-753 can be switched ON/OFF both by the ignition signal or its power button.

Note! *TREK-753 power input supports 12V/24V & 48V DC input. The default setting is for 12V or 48V (option board) only. If customer needs 24V DC input, please contact regional sales or distributors to customize in advance.*

Note! *The fuse in the power cable for a 12V/24V (10A) and a 48V (5A) system is different. Please check the fuse in your power cable before the system is powered on.*

2.2.1 Connecting the Power Cord

Connect the three pin waterproof power cord to the DC inlet of TREK-753. On the open-wire end, one pin is reserved for positive voltage and is marked "+" which needs to be connected to the power "+" side; one pin is reserved for ground and is marked "-"; which needs to be connected to the power "-" side. And, one pin is reserved for the ignition signal with an "ignition" mark. There's an independent "Shield" pin in the power cable; please fix it to the O-ring which is beside the TREK-753 power connector.

Note! *Ignition on/off setting: The TREK-753 supports an ignition on/off function so that you can power on/off the TREK-753 via the ignition signal/voltage.*

Connector : DECA Switchlab ME050-50803

Mating connector: MC101-50803-3Y

Figure 2.5 Power Connector Photo

Table 2.1: Pin Definition of Power Cord		
Pin	**Definition**	**Color**
1	+	Red
2	Shield	Black
3	-	Black
4	Ignition	Orange

2.2.2 Power Connector

TREK-753 can be powered on/off from the power button or directly from the vehicle ignition. There is a 5 second delay when using ignition on/off. This avoids impact from fluctuating power supply which might impact or damage system operation. For more power management details, please see Power management in Chapter 5.

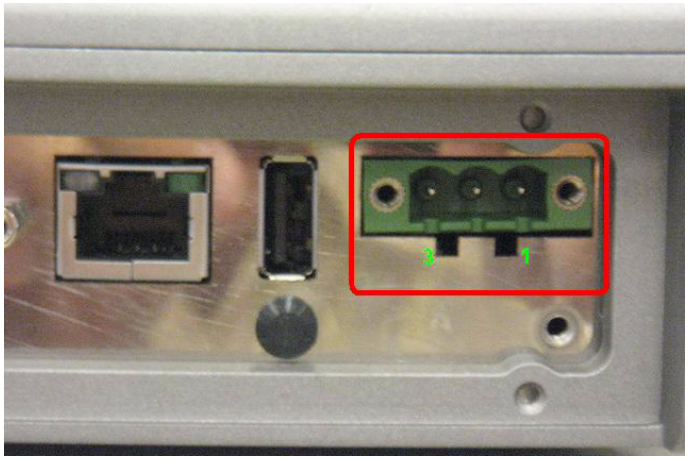


Figure 2.6 Power Connector Appearance

Table 2.2: Power Connector			
Pin	**Signal**	**Pin**	**Signal**
1	Ground	2	Power input (6~36VDC;18~58VDC)
3	Acc Ignition Input		

2.3 Running the BIOS Setup Program

In most cases, the computer will have been properly set up and configured by the dealer or system integrator prior to delivery. However, it may still be necessary to adjust some of the computer's BIOS (Basic Input-Output System) setup programs to change the system configuration data, like the current date and time, or the specific type of hard drive currently installed.

The setup program is stored in read-only memory (ROM). It can be accessed either when turning on or resetting the computer, by pressing the “Del” key on the keyboard immediately after powering up the computer.

The settings that are specified with the setup program are recorded in a special area of the memory called CMOS RAM. This memory is backed up by a battery so that it will not be erased when turning off or resetting the system. Whenever the power is turned on, the system reads the settings stored in CMOS RAM and compares them to the equipment check conducted during the power on self-test (POST). If an error occurs, an error message is displayed on screen, and the user is prompted to run the setup program.

2.4 Installing the Drivers for Win XP

After installing system software, the computer is ready to have the Intel® chipset, VGA, audio, LAN, and touch screen functions set up. All the pre-requisite drivers are stored on a CD-ROM disc entitled “Drivers and Utilities” (Check the correct wording on the CD, which can be found in the accessories box.)

The utility directory includes multimedia programs. Some drivers and utilities in the CD-ROM disc have their own text files which help users install the drivers and understand their functions.

These files are a very useful supplement to the information in this manual. For more updated driver please refer to the Advantech website, www.advantech.com/support

The drivers for TREK-753 are listed below; run the executable to install the drivers.

Device	Version
Intel SCH INF Update	8.8.0.1011
Intel US15 GMA500 Graphic Driver	6.14.11.1018
PenMount Universal Driver	2.1.1.0
Realtek RTL8111DL 10/100/1000 PCI-E NIC	5.728.604.2009
Realtek ALC892 High Definition Audio	5.10.0.5804
FTDI FT4232 BUS USB Driver	2.6.0.0
ublox LEA-5S Driver	1.2.0.5
Sierra Wireless MC5728V	5.1.2535.0
Sierra Wireless MC8790V	6.20.0.7
Ralink RT3091 Wireless LAN Card (AW-NE768)	1.4.2.1
BT-203B Utility BlueSoleil (Optional)	2.1.3.0

Note! *The drivers and utilities used for TREK-753 are subject to change without notice. If you are in doubt, check Advantech's website or contact our application engineers for the latest information regarding drivers and utilities.*

Chapter 3

Hardware & Peripheral Installation

This chapter details the installation of hardware for TREK-753.

Sections include:

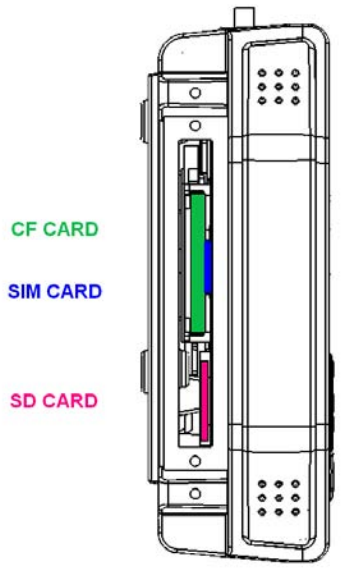
- Overview of Hardware Installation and Upgrading
- Installing the Storage Device and SIM Card
- Installing System Memory
- Installing the Drivers for Win XP

3.1 Overview of Hardware Installation & Upgrading

The Mobile Data Terminal consists of a industrial computer that is housed in a ruggedized aluminum enclosure. Any memory module or storage maintenance or hardware upgrades can be completed after removing the rear side RAM door/ side cover, or remove the front panel to install.

3.2 Installing the Storage Device and SIM Card

TREK-753 has a side door and a user can easily install a SIM card or storage (CF or SD) card. The CF card is the main bootable storage card which has the operating system pre-installed from Advantech. The CF slot with an ejector (on the top side) can eject the CF media from the socket with a press. The SD card acts as secondary storage in TREK-753. The system is NOT allowed boot up from SD.



Note! *Please do NOT paste any sticker or label on a CF or SD card; it might cause jamming and not be able to be ejected from the slot/socket.*

3.3 Installing System Memory

TREK-753 supports 200-pin SODIMM type DDRII DRAM. There's a door which can be opened for RAM installation. It is very easy to open to install memory. However, we suggest this change performed by our service center to avoid any possible damage (like electrostatic discharge or memory inserted in the wrong position.

Note! *For best thermal management, please make sure the thermal pad on RAM door (Block in black) is always in place before the door cover is put back on. (For a bare bone system, the thermal pad is in the accessories box).*

3.4 Installing Optional Accessories

Optional accessories, like RAM mount kits or other functional modules are available for purchase as complements for TREK-753. All accessories use standard 75mm type mounting with M5 type screws only.

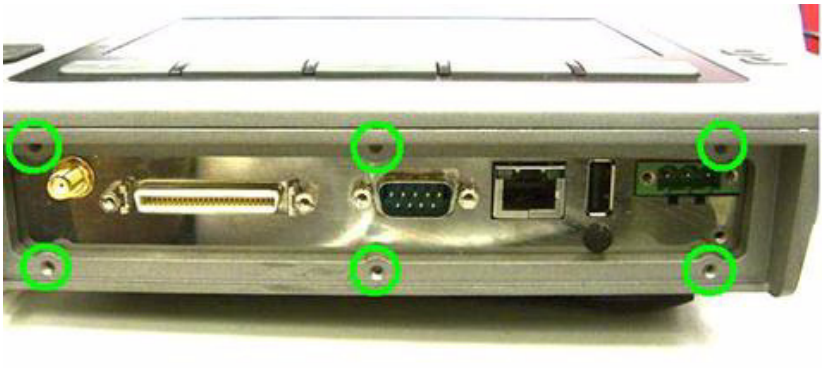
3.5 Installing the I/O Cover

To ensure TREK-753's entire system is protected with an IP54 rating, assemble the IP54 I/O cover kit to mask all the connectors on the bottom side.

From left to right: plastic I/O cover, rubber seal, and plastic I/O box. Remove tape adhesive cover on the back side of rubber seal, adhere the a rubber seal to the plastic I/O cover and route all cables across the plastic I/O box starting from the outside and moving toward the inside.

Connect all cables to system and secure before the cover is installed.

There are 6 screws holes designed for the extra mechanical part installation. The mounting frame needs to be secured by these holes.

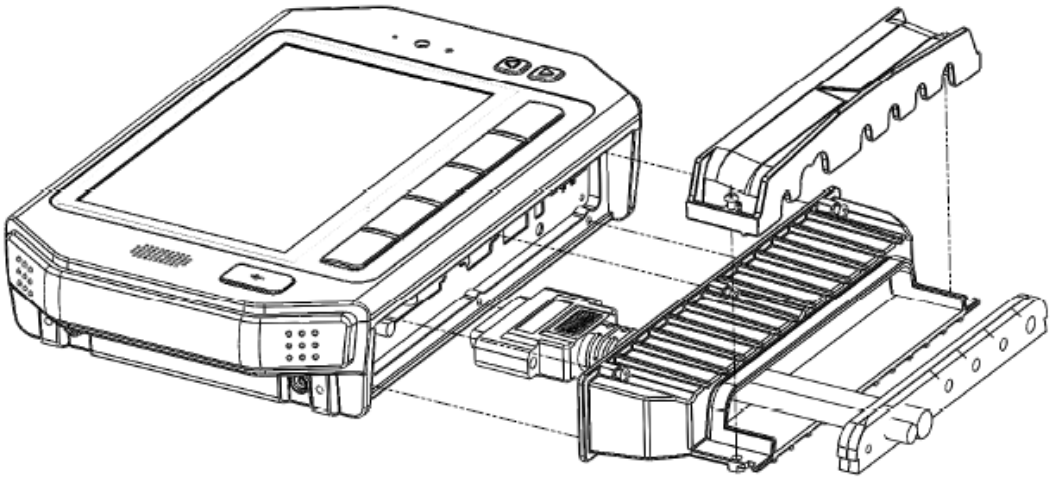


Install the cover attaching it in place with the 6 screws.

Screw the plastic I/O cover onto the plastic I/O box.

Installation complete.

See the exploded drawing for clear assembly illustration.



3.6 Installing Wireless Options

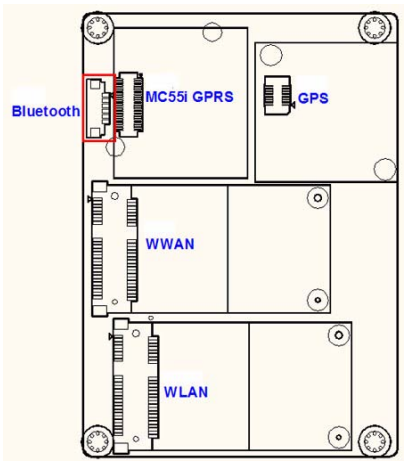
TREK-753 is a highly integrated all-in-one terminal, all wireless options are able to installed at once and work by independent connection. In the standard OS that comes with TREK-753, all wireless connections have been setup in advance and users will not need to set them up again. This information is provided for those who need to build new wireless connections if necessary. RF options include:

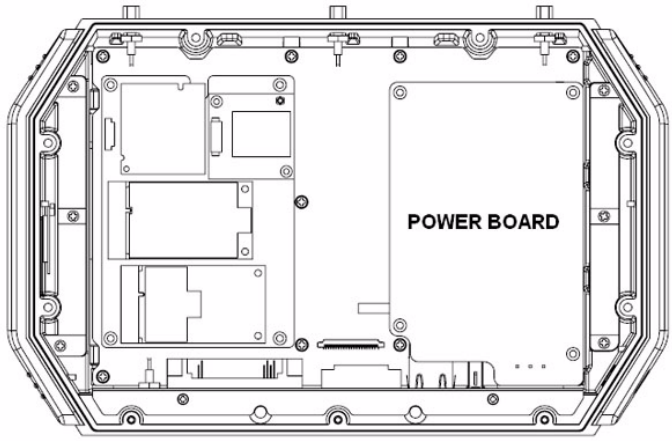
Bluetooth

Wireless LAN(WLAN)

WWAN (GPRS/CDMA/HSDPA)

GPS





Note! *All hardware or reconfiguration changes should be performed by Advantech or its authorized service partners.*

3.6.1 WLAN

Driver Installation

1. Make sure the Wi-Fi module has been installed in the TREK-753.

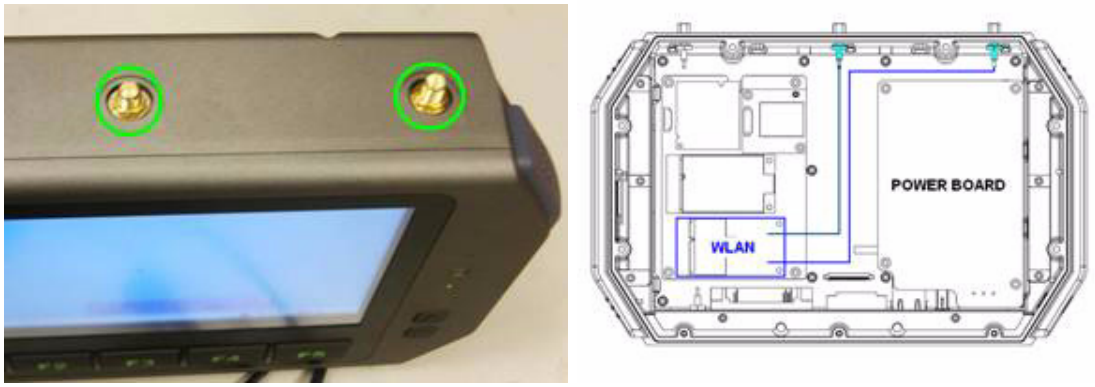
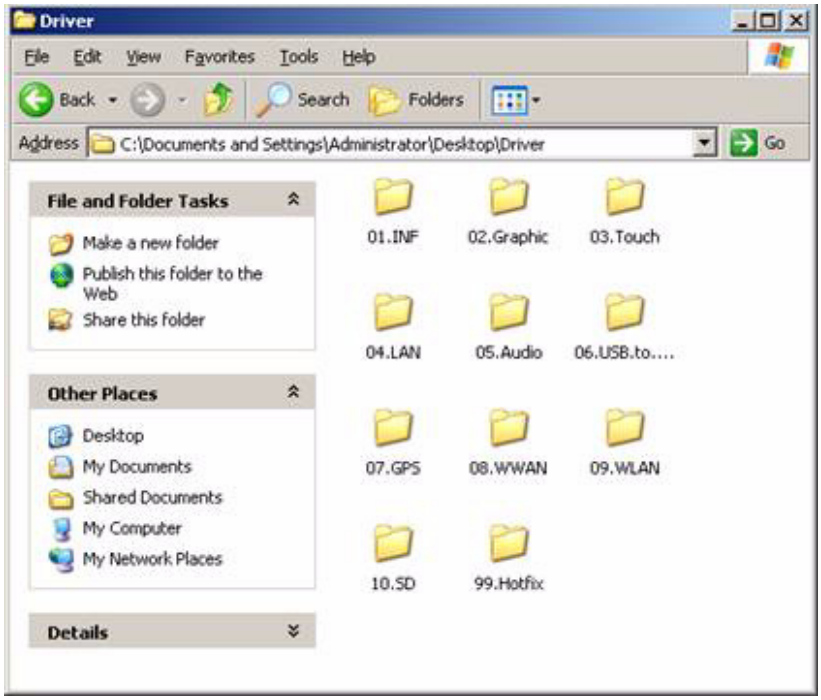


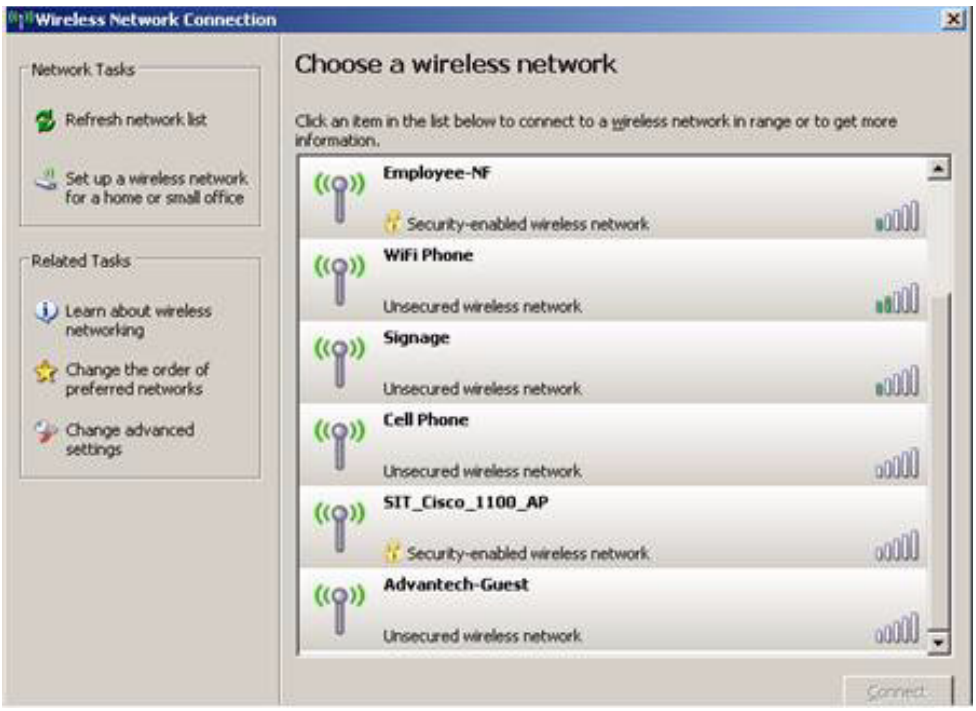
Figure 3.1 Top View of TREK-753

2. Make sure there is a wireless router and access point working available for TREK-753 to connect to.
3. Turn on the TREK-753, and boot into the OS.
4. Double click "Setup.exe" from the driver CD (WLAN_AW-NE768_090714) to install driver

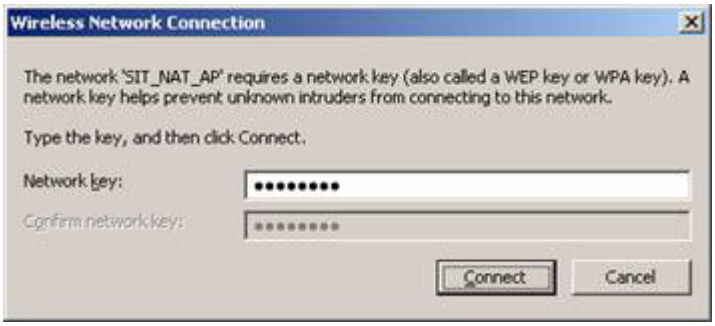


Setup Connection

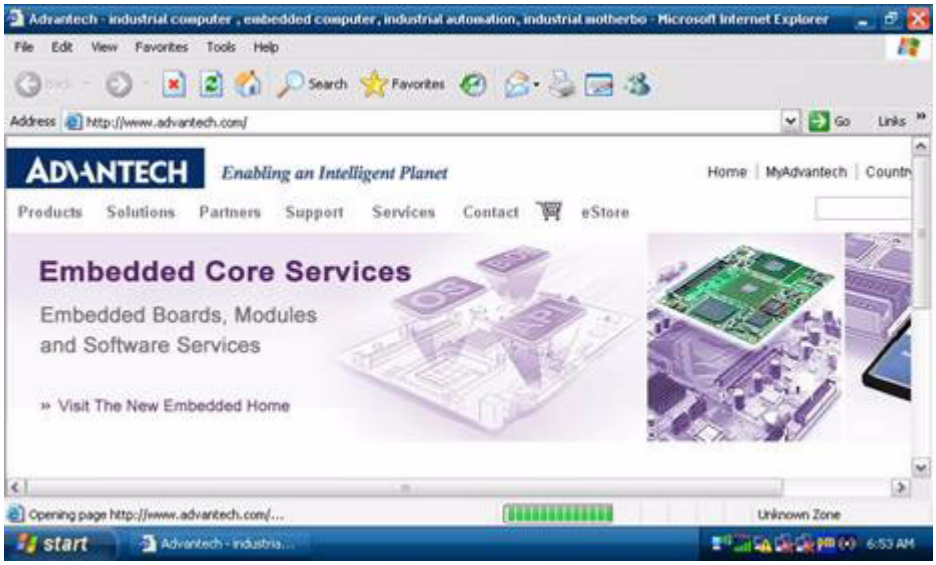
1. Press Start - Control panel - Network connections - Press right mouse button and select properties for the wireless network connection; click "View Available Wireless Networks".



2. Highlight one of the available wireless LAN icons and double click on the Connect button found in the lower right-hand corner.
3. Some APs devices will have different SSIDs; choose an available one and connect (entering user ID & password if prompted).


Wireless Network Connection
The network 'SIT_NAT_AP' requires a network key (also called a WEP key or WPA key). A network key helps prevent unknown intruders from connecting to this network.
Type the key, and then click Connect.
Network key:
Confirm network key:
Connect
Cancel

4. Click Connect after entering key (if prompted) to connect to the wireless AP. Open the web browser and TREK-753 will connect to the internet.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start

3.6.2 GPRS

Driver Installation

1. Make sure the Criterion MC55i GPRS module has been installed in the TREK-753.

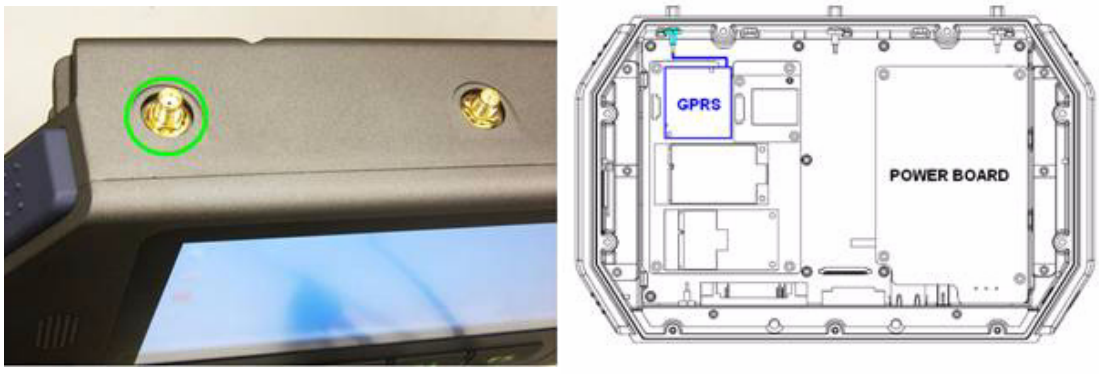


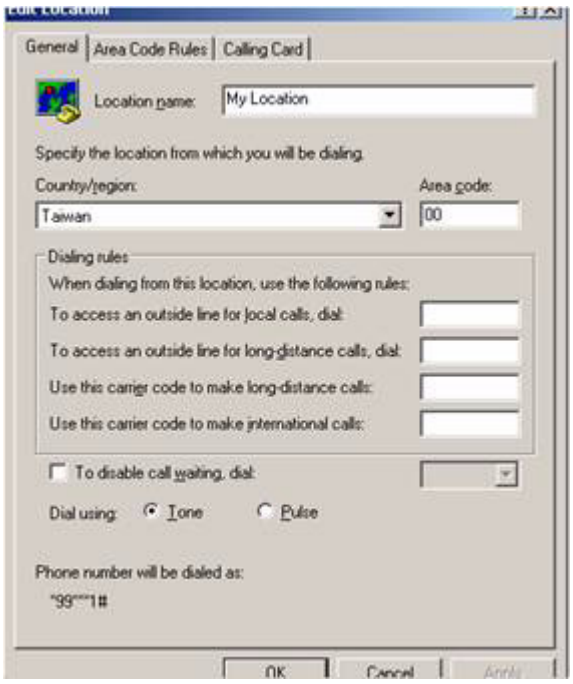
Figure 3.2 Top View of TREK-753

2. Insert the user’s SIM card in the TREK-753 slot; make sure the SIM card has already applied to a GSM network in advance and can transmit/receive data.

3. Turn on the TREK-753, and boot up the OS.
4. GPRS (MC55i) connects to the system on the COM port interface; it doesn't need a separate driver. However, please check in advance that the device manager doesn’t show any entries with question marks.

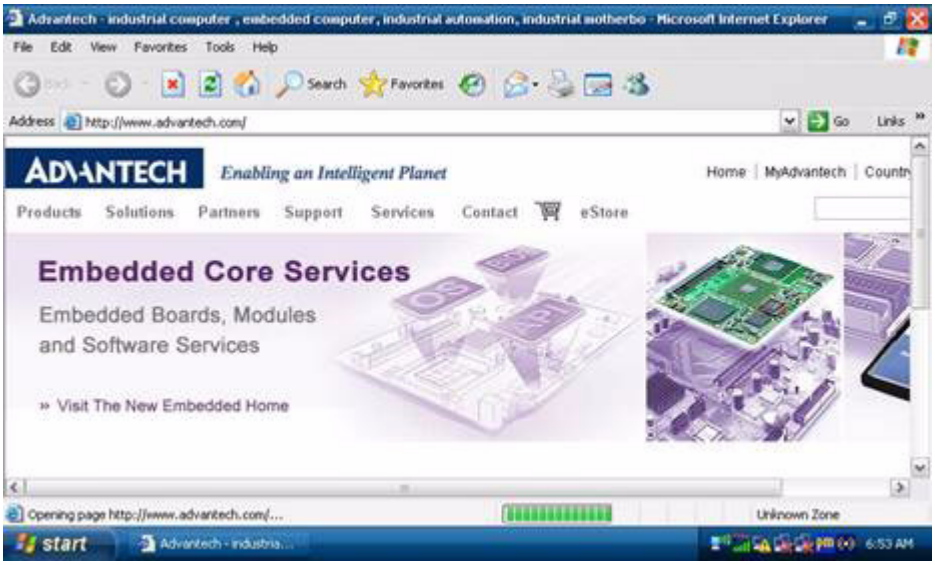
Setup Connection

1. Press “Start” - “Control Panel” - “Phone and Modem options.”
2. Switch to “Dialing Rules” tab; press "New." Input GPRS Location name in Country/region field; input "00" for Area code.



3. Switch to “Modems” tab, press "Add." Select "Don't detect my modem; select it from a list." Press “Next.”
4. Choose "Standard 19200 bps Modem." Press “Next.”
5. Select “COM port.” Press “Next.” Press “Finish.” The screen will display "Standard 19200 bps Modem."
6. Press "Properties." Switch to modem tab and select "Maximum Port Speed." Change speed from 19200 to 115200 - press “OK.”
7. Switch to “Advanced” tab. In the extra settings textbox, input: at+cgdcont=1,"IP","internet". Press “OK.”
8. In the “Network Connections” panel, select “Make New Connection.”
9. In the “Make New Connection Dialog” choose "Connect to the Internet." Press “Next.”
10. Choose "Set up my connection manually." Press “Next.”
11. Choose "Connect using a dial up modem." Press “Next.”
12. Input ISP Name (ex: GPRS)." Press “Next.”
13. Do NOT input Phone number, User name and Password.
14. In completing the new connection wizard textbox, select "Add a shortcut to this connection to my desktop." Press “Finish.”
15. In the “Network Connections” panel, click right mouse button, select “Properties”
16. In the "Phone number” textbox, input: *99***1#. Press, “Configure.”

17. Change "Maximum speed (bps)" to 115200. Press “OK.”
18. Once the previous steps are complete, the new connection will be created.
19. Double Click on the new connection and Click “Dial.” TREK-753 will connect to the internet.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Embedded Boards, Modules
and Software Services
» Visit The New Embedded Home
Opening page http://www.advantech.com/...
Unknown Zone
start
Advantech - industria...
6:53 AM

3.6.3 HSDPA (3.5G)

Driver Installation

1. Make sure the HSDPA module has been installed in the TREK-753.

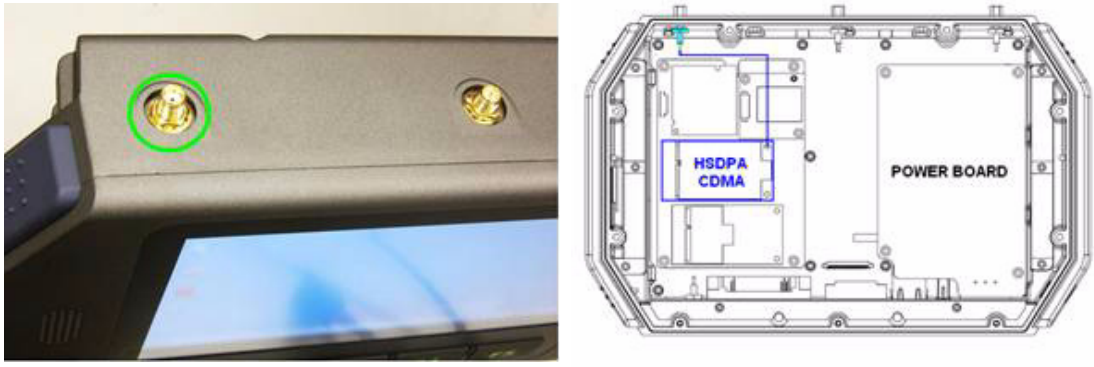


Figure 3.3 Top View of TREK-753

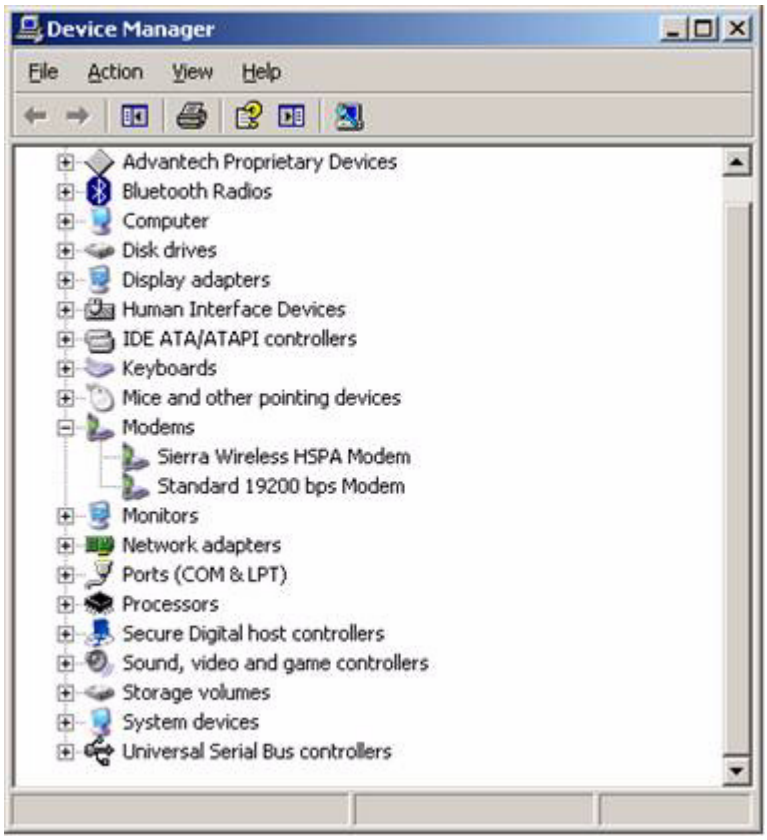
2. Insert the user's SIM card in the slot; make sure the SIM card has already applied to a GSM network in advance and can transmit/receive data.

3. Turn on the TREK-753, then boot into the OS.
4. Install the HSDPA USB module driver/AP "Watcher_Generic Build 2258.msi" from driver CD on the Windows Embedded OS.

Sierra Wireless Watcher
SIERRA WIRELESS
Welcome to the InstallShield Wizard for Sierra Wireless Watcher Build 2258
The InstallShield(R) Wizard will install Sierra Wireless Watcher on your computer. To continue, click Next.
WARNING: This program is protected by copyright law and international treaties.
Next >
Cancel

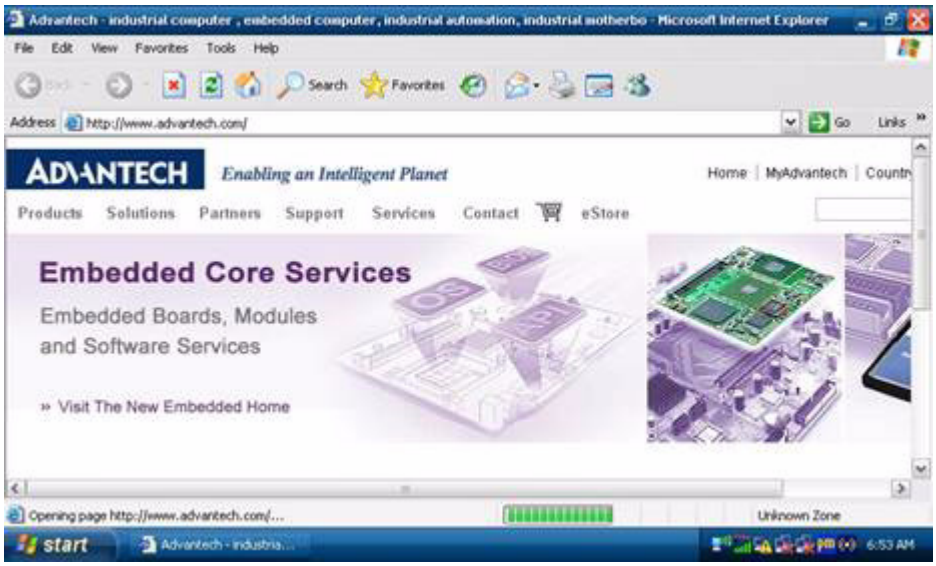
Setup Connection

1. Check the device manager to make sure there are no entries with question marks.



2. To complete the new connection wizard textbox, select "Add a shortcut to this connection to my desktop," then click “Finish.”
3. Once completed, the new connection will be created.

4. Double Click the "Sierra Wireless Watcher" and Click Button "Connect." The TREK-753 will connect to the internet.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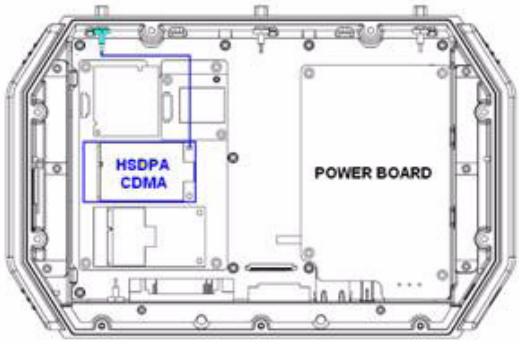
Embedded Core Services
Embedded Boards, Modules and Software Services
» Visit The New Embedded Home
Opening page http://www.advantech.com/...
Unknown Zone
start
6:53 AM

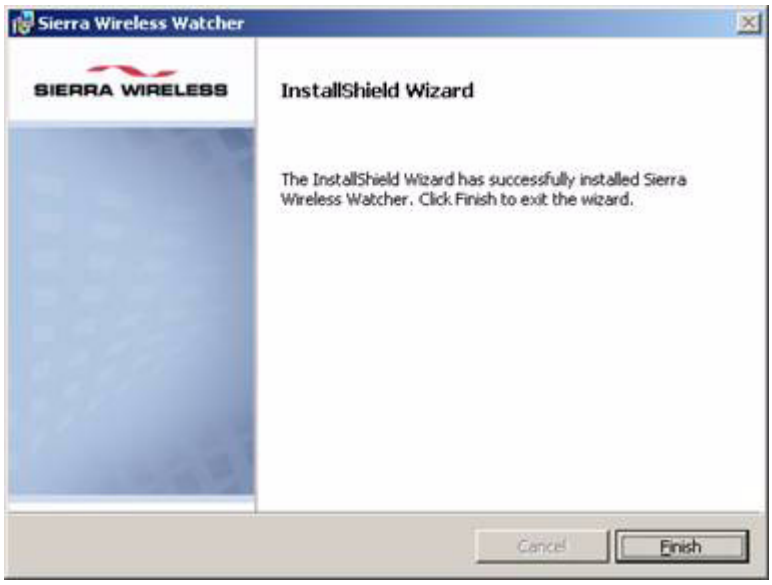
3.6.4 CDMA (3.5G)

Driver Installation

1. Make sure the CDMA module has been installed in the TREK-753.



2. Insert the user's SIM card in the slot. Make sure the SIM card has already applied to a GSM network in advance and can transmit/receive data.
3. Turn on the TREK-753, then boot into the OS.
4. Install the CDMA USB module driver "Watcher 7.11.msi" from Windows Embedded OS.


Sierra Wireless Watcher
SIERRA WIRELESS
InstallShield Wizard
The InstallShield Wizard has successfully installed Sierra Wireless Watcher. Click Finish to exit the wizard.
Cancel
Finish

Setup Connection

1. In completing the new connection wizard textbox, select "Add a shortcut to this connection to my desktop," then click “Finish.”
2. Once completed, the new connection will be created.
3. Double Click the icon on the desktop; click "Connect." TREK-753 will connect to the internet.

3.6.5 GPS

Installation

1. Make sure the GPS module & antenna has already been installed in the TREK-753.

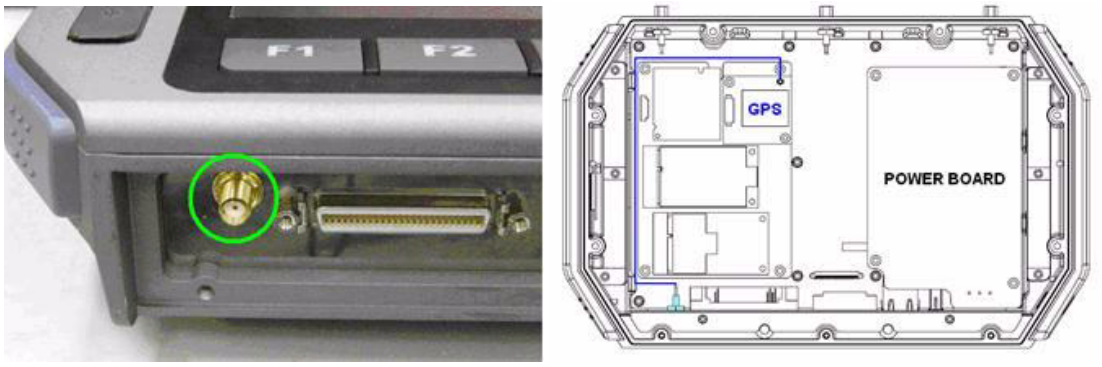


Figure 3.4 Bottom View of TREK-753

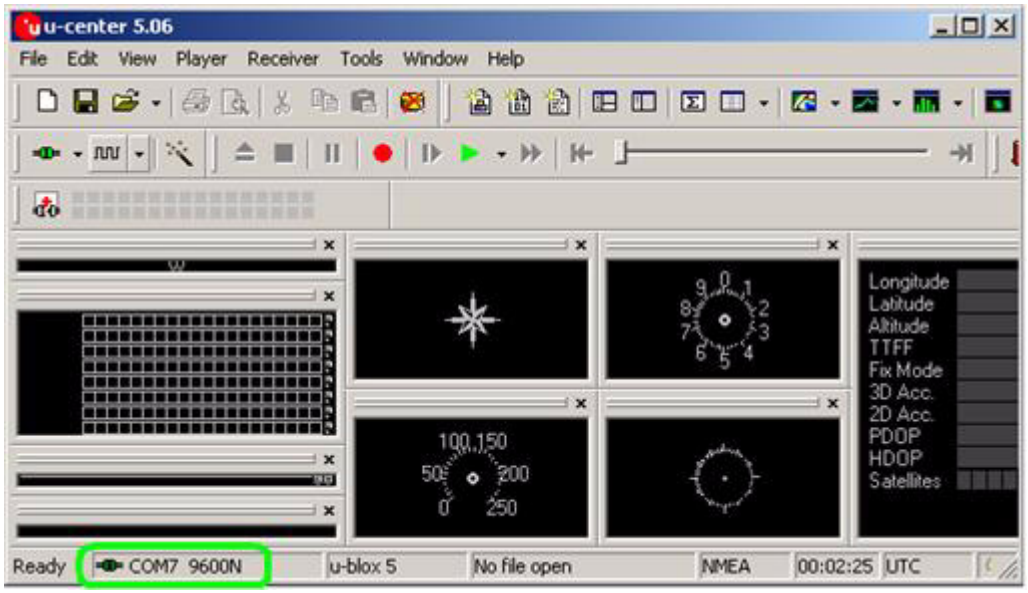
2. Turn on the TREK-753, boot up the OS.
3. Double click "ublox_A4_U5_USB_drv3264_install_UI.exe" application program on the driver CD to install.

Antaris4 and u-blox5 USB driver Setup
Welcome to the Antaris4 and u-blox5 USB driver Setup Wizard
This wizard will guide you through the installation of Antaris4 and u-blox5 USB driver.
It is recommended that you close all other applications before starting Setup. This will make it possible to update relevant system files without having to reboot your computer.
Click Next to continue.
Next >
Cancel

Setup Connection

1. Install "u-Center" to setup and test.

2. Start test in "u-Center," setting COM port (COM7) and baud rate (9600bps) used for GPS module.



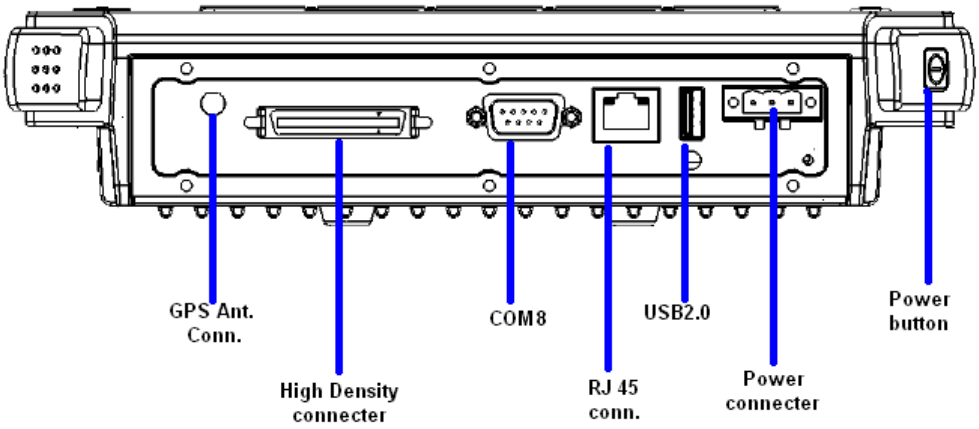
3. After starting test, NMEA output messages are display in the Development Data View setup connection.

Chapter 4

Pin Assignments

This chapter explains pin assignments on the TREK-753.

4.1 Rear Side Connectors



4.2 Power Connector

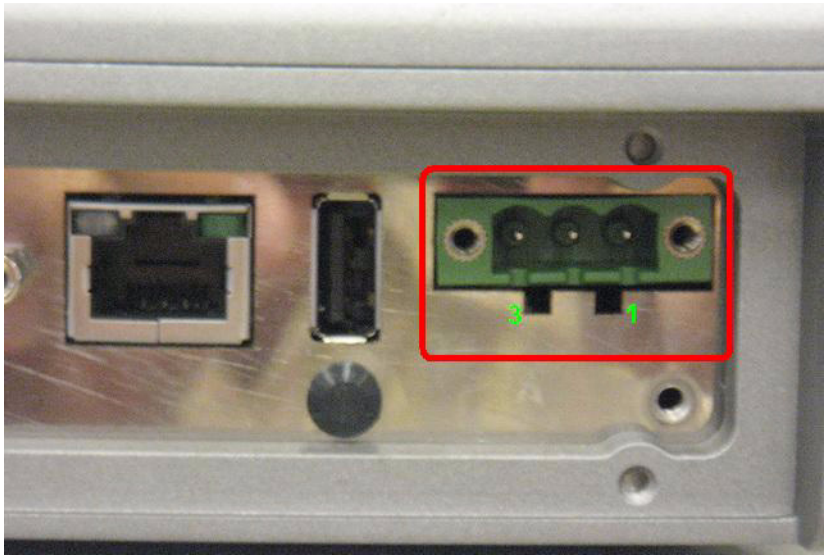


Table 4.1: Power Connector

Pin	Signal	Pin	Signal
1	Ground	2	Power input
3	Acc Ignition Input		

Note! *TREK-753 has 2 power options for different applications:*

- *Input Voltage 12 V/24 V options support 6~36 V power design with ISO7637-2 & SAE J1113 compliance (default)*
- *48 V option supports 18~58 V input for specific applications (Optional)*

4.3 High Density Connector

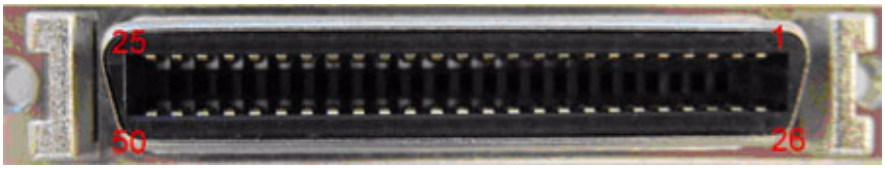


Table 4.2: High Density Connector

Pin	Signal	Pin	Signal
1	+5VDC output (+/- 5%, max 0.5A)	2	+5VDC output (+/- 5%, max 0.5A)
3	USB Ground	4	USB D+
5	USB D-	6	CVBS Ground
7	CVBS IN	8	RSVD
9	Audio Ground	10	LINE OUT L
11	LINE OUT R	12	LINE IN R
13	LINE IN L	14	MIC IN
15	RS-485 Ground	16	COM5 485-
17	COM5 485+	18	J1708 Ground
19	COM6 J1708-	20	COM6 J1708+
21	Isolation CAN Ground	22	CAN L
23	CAN H	24	RSVD.
25	RSVD.	26	+12VDC output
27	+12VDC output	28	+12VDC output
29	Power Ground	30	Power Ground
31	Power Ground	32	COM9 RS-232 RI#
33	COM9 RS-232 CTS#	34	COM9 RS-232 RTS#
35	COM9 RS-232 DSR#	36	RS-232 Ground
37	COM9 RS-232 DTR#	38	COM9 RS-232 TXD
39	COM9 RS-232 RXD	40	COM9 RS-232 DCD#
41	RSVD.	42	Isolated Relay Driver Output 4#
43	Isolated Relay Driver Output 3#	44	Isolated Relay Driver Output 2#
45	Isolated Relay Driver Output 1#	46	Isolated Dry Contact Input 4
47	Isolated Dry Contact Input 3	48	Isolated Dry Contact Input 2
49	Isolated Dry Contact Input 1	50	Isolation DIO Ground

4.4 RS-232 Connector (COM8)

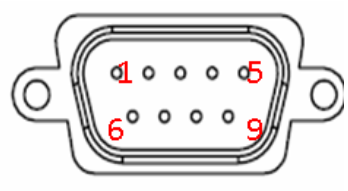


Table 4.3: RS-232 Connector (COM8)

Pin	Signal	Pin	Signal
1	RS-232 DCD	2	RS-232 RXD
3	RS-232 TXD	4	RS-232 DTR
5	RS-232 Ground	6	RS-232 DSR
7	RS-232 RTS	8	RS-232 CTS
9	RS-232 RI / +12 VDC (max. 2500 mA)		

4.5 LED Indicator

This system power indicator is an orange LED, controlled by hardware.
This LED will be lit on when the system is in NORMAL mode.
When system is off, this LED will not be lit.

Chapter 5

Software Demo Utility Setup

This chapter explains the software demo utility for TREK-753.

Sections include:

- Introduction
- How to Set up Demo Utility
- Installing the Drivers for Win XP

5.1 Introduction

To make the hardware easier to access for programmers, Advantech has developed a demo utility in order to let customers test the functions on TREK-753. This document describes detailed information for each Advantech demo utility so that application developers can become more familiar with using them.

For technical support, contact Advantech application engineers worldwide. For news updates, visit our website: www.advantech.com

5.1.1 Execute J1939 Demo Utility

This section explains how to install the Advantech demo utility in Windows XP Pro / Embedded.

1. Execute the test program called “IMC_Demo”

Figure 5.1 IMC Demo Utility

2. Click “J1939.” Customer may connect directly to the truck; we use a car simulator board below to explain how J1939 protocol can be executed.
   First, connect the simulator board to TREK-753 CAN port and console PC, once the simulator is powered on (connect to the truck), you can start getting the data. Click “Read” to get the data from the car simulator; click “Read” to transfer the data to console.

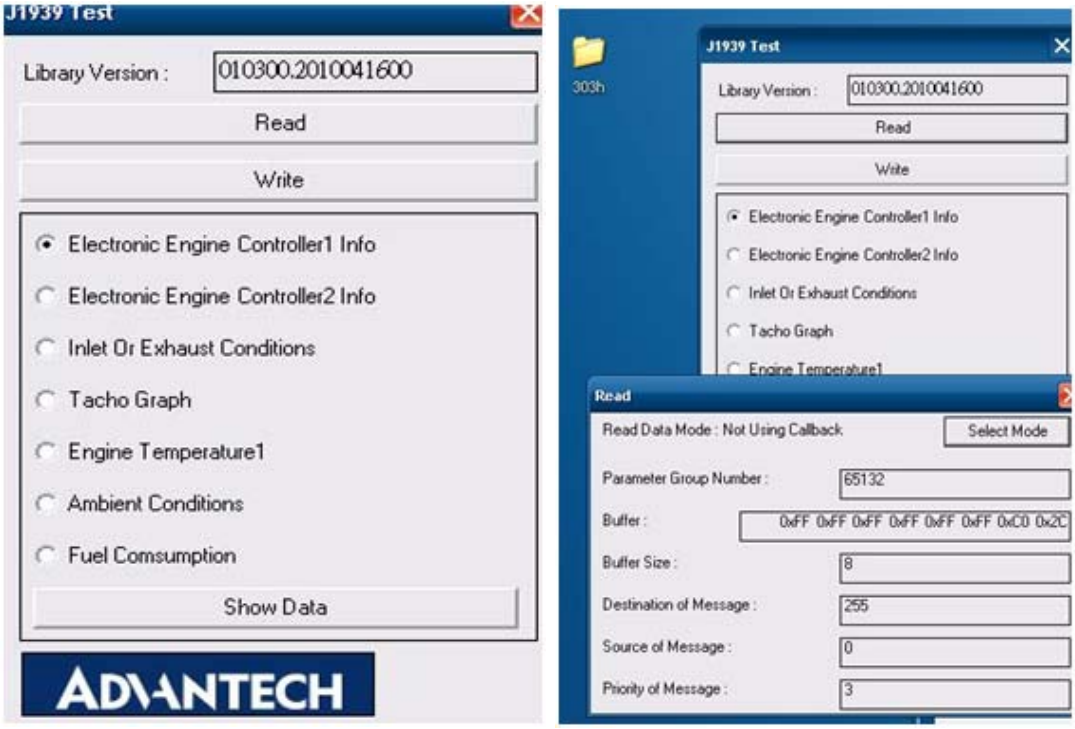


Figure 5.2 J1939 Test - 1 & 2

5.2 Hot Key Test

Click "Hot Key test" program in IMC demo main menu.

If "Auto Brightness" is checked TREK-753 will adjust the panel brightness automatically using a built-in light sensor input. Or the brightness of panel and hot keys can be set manually.

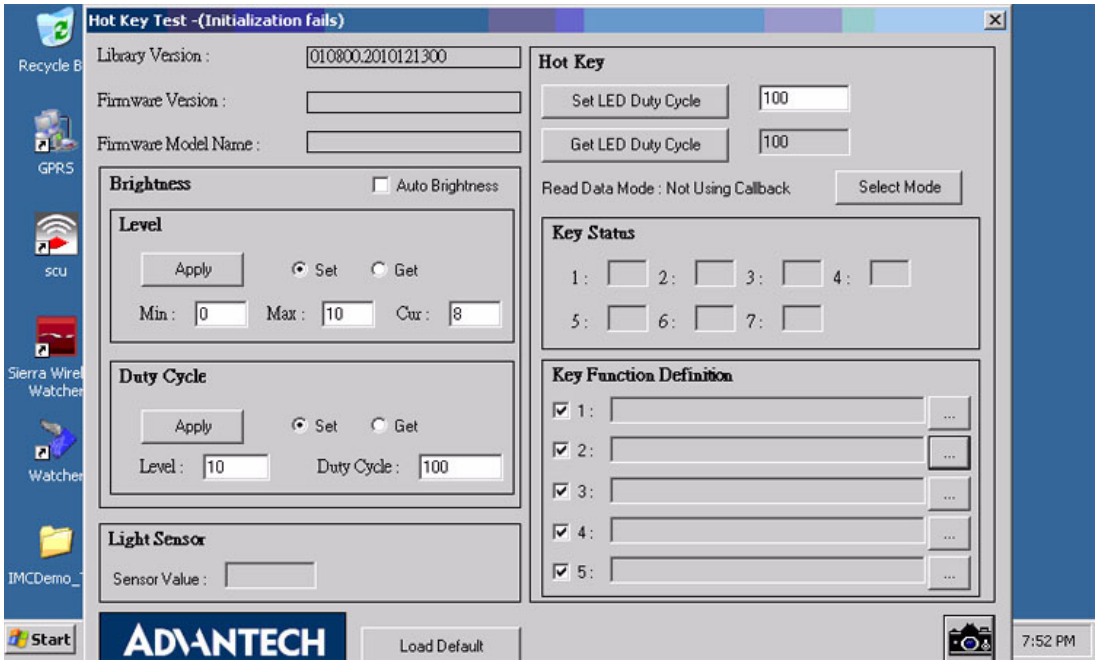


Figure 5.3 Hot Key

Brightness Level: Check "Set" option, key in brightness from level 0 ~10 in "Cur" column.

The bigger the number, the brighter the panel.

When you finish setting the brightness level you want, please click "Apply."

If you want to check the current brightness level, please click "Get."

Duty Cycle: Each level's brightness strength can be set to any level.

After you finish setting the "Level" and "Duty Cycle" value for each level, click "Apply."

If you want to check the current brightness strength on a certain level, please click "Get."

Light Sensor: When the sensor detects a change in brightness in the environment, the value will change. The lower the value, the lower the brightness, and vice versa.

Hotkey: the backlight brightness of hotkeys can be adjusted by setting the value from 0 ~100.

Key Status: When you press Hot key, the status will change from 0 to 1.

Key Function Definition: Set the parameters to connect to the application program function of the hot key.

5.3 RTC Test

Execute “RTC test”

1. **For RTC Time Setting**: You can set year, month, date, and time as shown below.

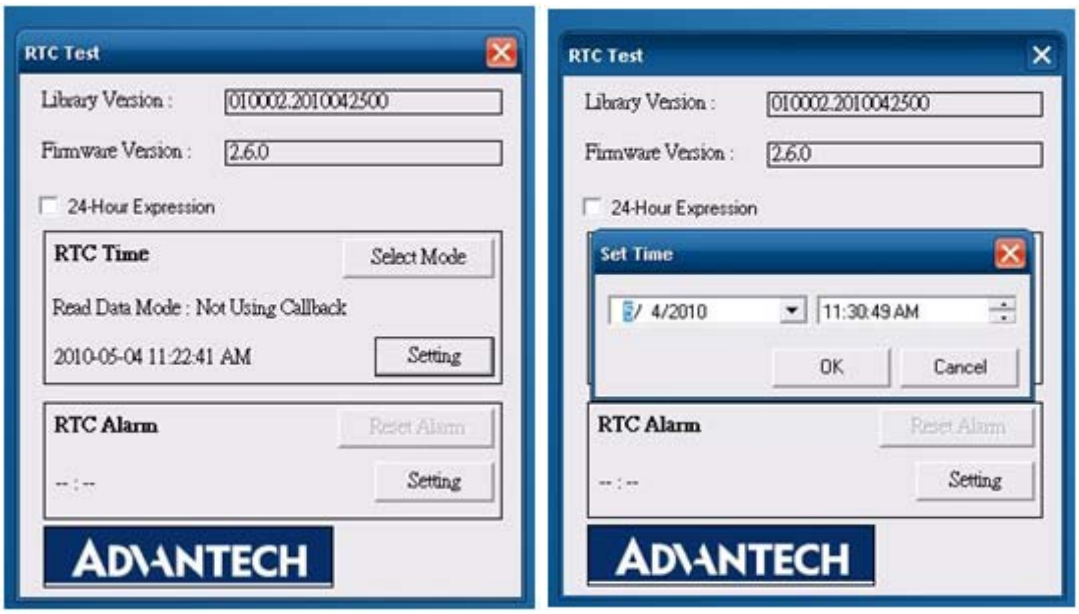


Figure 5.4 RTC Test - 1 & 2

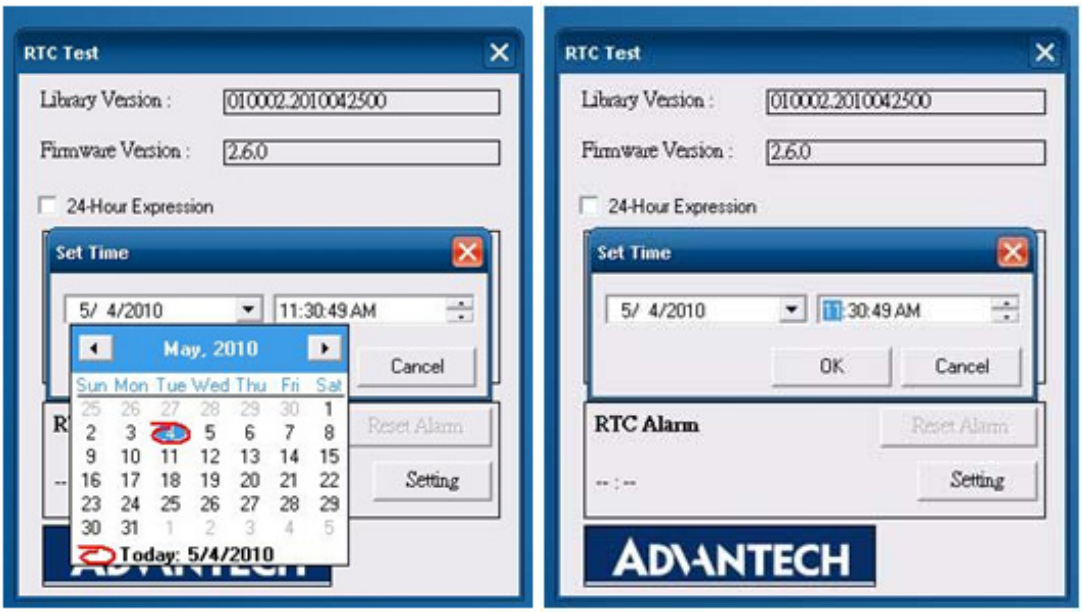


Figure 5.5 RTC Test - 3 & 4

2. RTC Alarm Setting: You can also set Alarm time; you can wake up the system at the time you have set. Please refer to the figure below.

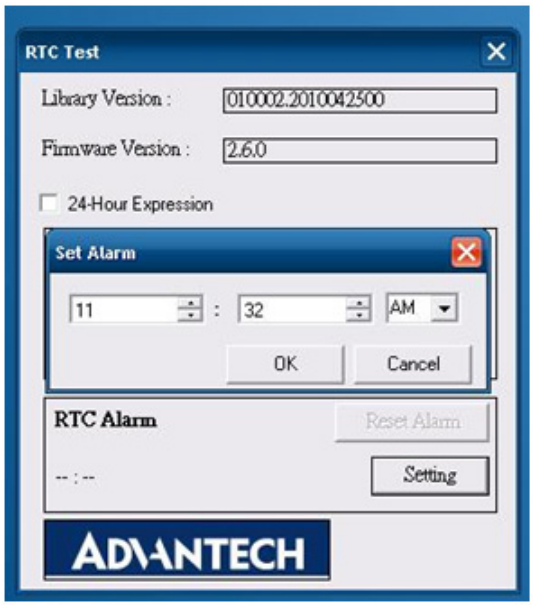


Figure 5.9 RTC Test - 5

5.4 Power Management

5.4.1 Power Management Mechanism

The Power Management feature is provided for users to fulfill special requirements for different applications.

- Ignition on/off:
  - Turn on the system by ignition

    In the case of applications, an ignition signal is often used to turn on or shut-down the system. When the system is in an OFF state and the ignition is turned ON, the VPM controller will countdown to ON_DELAY; once it counts to zero, the system will be turned on.
  - Shutdown the system by ignition

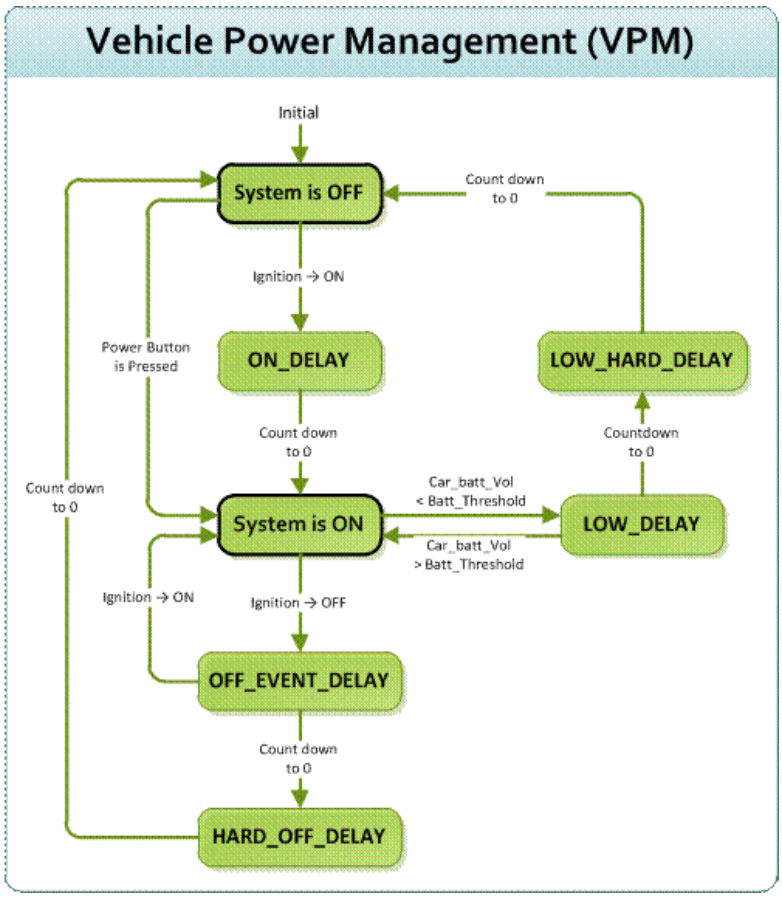
    When the system is powered on and the ignition is turned off, the OFF_EVENT_DELAY will start to count down. During this stage, if the ignition is switched back to ON, the VPM controller will stop countdown and reset the OFF_EVENT_DELAY value. If OFF_EVENT_DELAY counts to zero, the VPM controller will send an event (power button press) to the system and start to count HARD_OFF_DELAY. Application programs can watch this event and do pre-defined tasks, like storing data and preparing to turn off the system.

    Once going into the HARD_OFF_DELAY stage, this process cannot be reversed. If HARD_OFF_DELAY counts to zero, the system power will be cut off abruptly.
- Low power protection:

  To avoid draining power, low-power protection is ensures their is enough power to start the vehicle. When the system is ON, the VPM controller will monitor the power voltage. If the voltage is lower than the programmable threshold (LOW_THRESHOLD), the VPM controller will go into LOW_DELAY stage and start to count down. During the stage of LOW_DELAY countdown, if voltage goes back above LOW_THRESHOLD, the VPM controller will stop counting down and exit. If LOW_DELAY counts to zero, the VPM controller will send an event (power button press) to notify the system, go into LOW_ HARD_DELAY stage and start to count down. Once LOW_ HARD_DELAY counts to zero, the VPM controller will cut off the system power abruptly to avoid draining the power.

The table below lists the user programmable parameters for VPM features:

	Default value	**Acceptable range**
ON_DELAY	2 seconds	1 ~ 18000 seconds
OFF_EVENT_DELAY	5 seconds	1 ~ 18000 seconds
HARD_OFF_DELAY	60 seconds	1 ~ 18000 seconds
LOW_THRESHOLD (12V mode)	11.42 V	10.09 ~ 12.25 V
LOW_THRESHOLD (24V mode)	22.44 V	21.11 ~ 23.28 V
LOW_DELAY	30 seconds	1 ~ 3600 seconds
LOW_ HARD_DELAY	60 seconds	1 ~ 3600 seconds



5.4.2 Power Management Utility Program

Execute IMCDemo.exe file, see the icon below.

5.4.3 Power Management Parameter Settings

The parameters for power management on TREK-753 can be read or modified by the Demo utility (see the image below) or SDK/API.

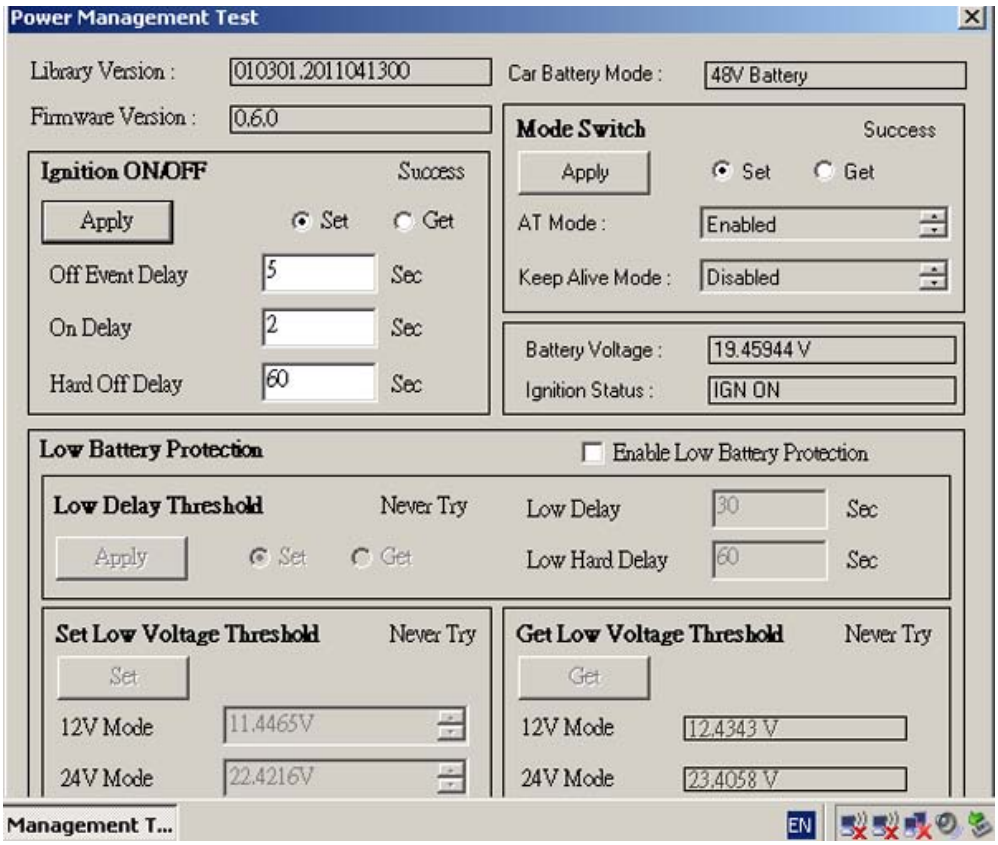


Figure 5.10 Power Management Test Utility

5.4.4 TREK-753 Power Consumption

OS: Windows Embedded Standard

Burn-in test V6.0

Power mode	Power input range	Power consumption (Typical)
12V/24V	6V~36V/6A(max)	36 Watt
48V	18V~58V/2A(max)	36 Watt

*Doesn't support S1, S3, S4

5.5 Execute CAN Demo Utility

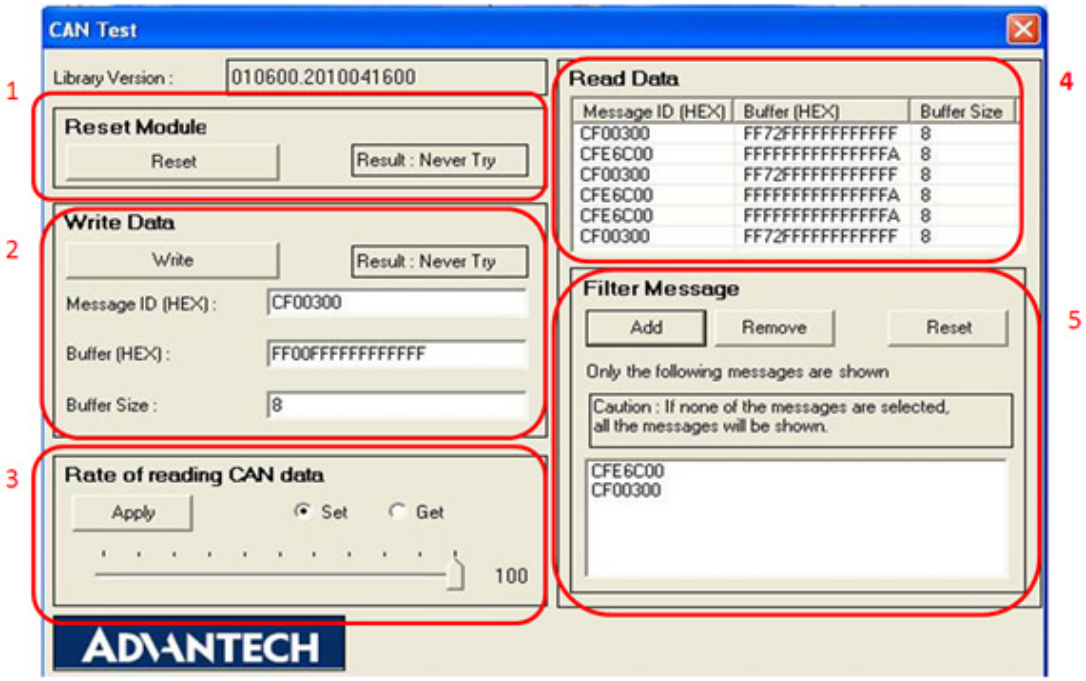


Figure 5.11 CAN Test

1. Reset the module
2. Transmit CAN message
3. Set the polling rate of CAN message reception
4. Received CAN message.
5. Set up the filter of CAN message (only show the message ID)

5.6 GPIO Test

1. To execute the I/O Test, connect GPIO loopback, click Pin0, connect the end which reads the signal, the bulb should light up, likewise to Pin1 ~ Pin3. Next check the Digital Output box to execute the same procedure. See Figure 6.

Figure 5.12 DI/O Test

a. Digital Output ==> isolated relay driver output

b. Digital Input ==> isolated dry contact input

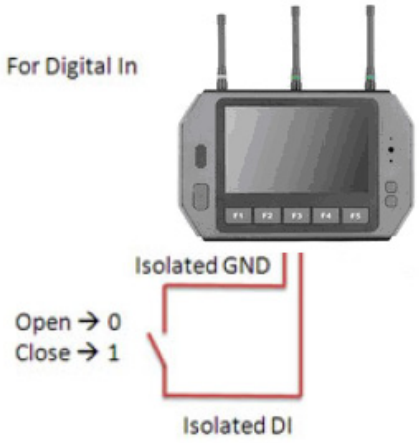


Figure 5.13 Digital In

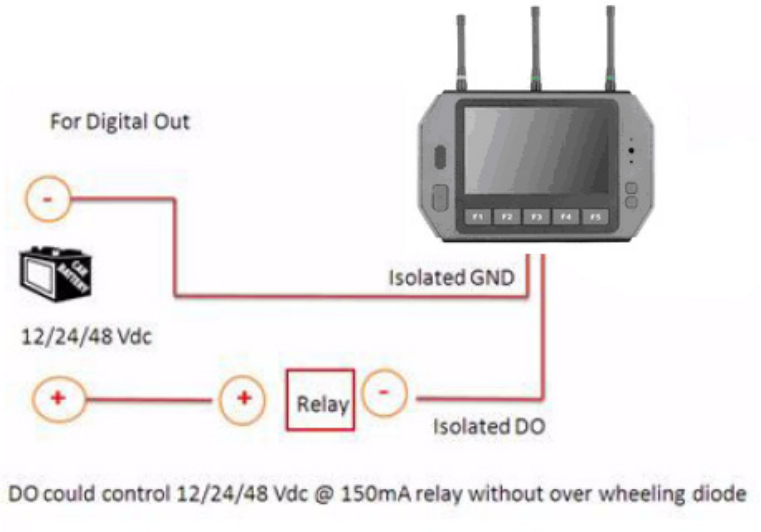


Figure 5.14 Digital Out

5.7 Video in Test

There is one video input. Connect camera to the port, CAM1. Choose Channel 1 on "Switch to." The panel will show the image which Camera1 has taken, and it will fall-back to original status after 10 sec.

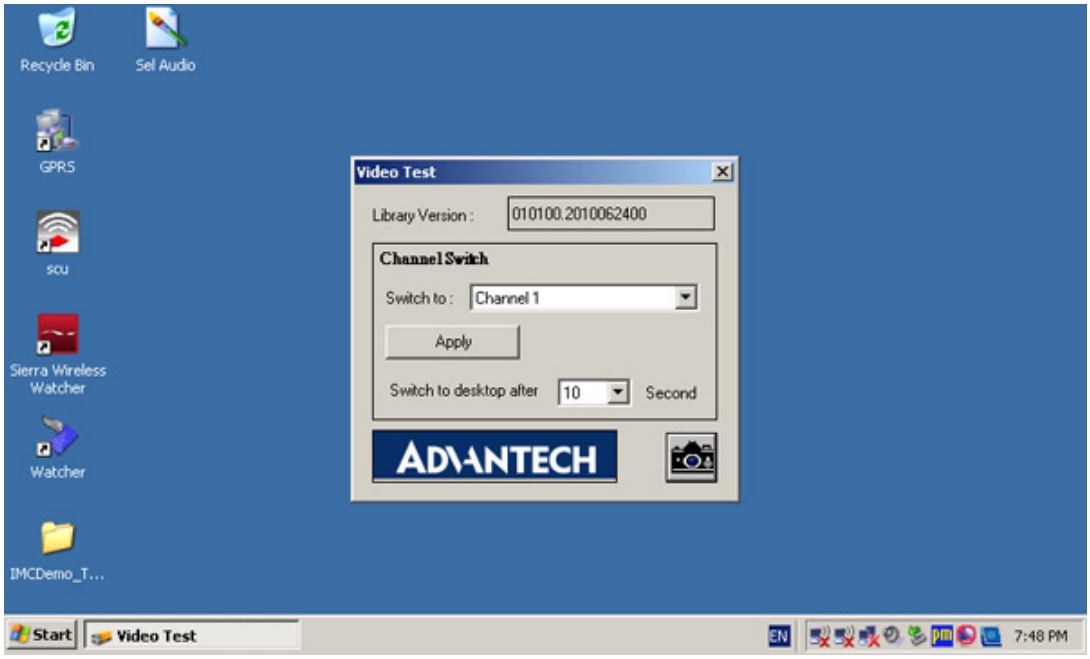
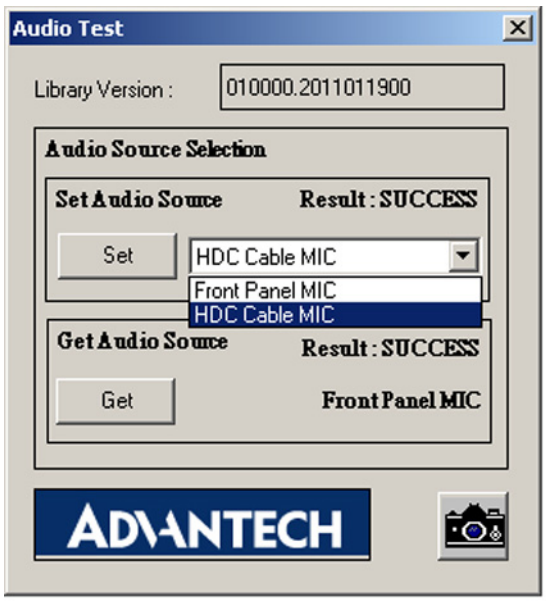


Figure 5.15 Video Test Utility

5.8 Audio Test

TREK-753 has a built-in microphone on the front panel. Audio functions (Line out and Line-in & Mic-in) can be extended to remote site using a high density cable. Both Line out & Line in functions work when a high density cable is connected. Mic-in is able to work either from the front panel or from a high density cable.



Appendix A

High Density Cable Pin Assignment

The high density connected for TREK-753 includes 48 wires in a 2-meter cable. It extends functionality of many of the I/O port with standard type connectors.

At the host side, a 3M 10150-3000 PE series 50-pin connector can be connected with TREK-753.

A.1 Standard USB A Type Female Connector

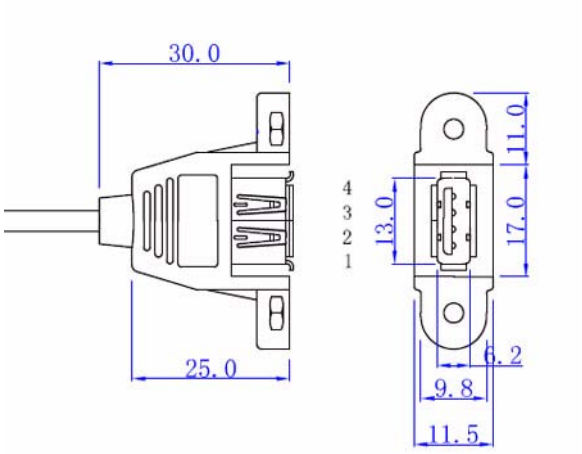


Table A.1: Standard USB A Type Female Connector

Pin Number	Definition
1	+V5_USB
2	USB_D-
3	USB_D+
4	GND(Drain wire)

A.2 Video input, BNC Female Connector

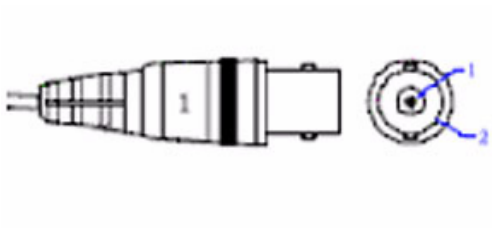


Table A.2: Video Input, BNC Female Connector

Pin Number	Definition
1	CVBS_IN
2	GND(Drain wire)

A.3 RS-232 Connector (DB9 Male) (COM9)

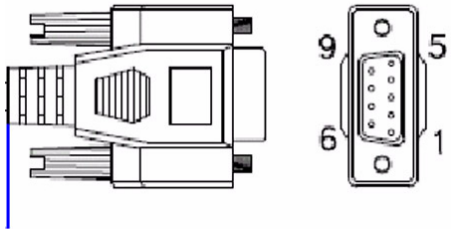


Table A.3: RS-232 Connector (DB9) (COM9)

Pin Number	Definition
1	RS232_DCD
2	RS232_RXD#
3	RS232_TXD#
4	RS232_DTR
5	GND(Drain wire)
6	RS232_DSR
7	RS232_RTS
8	RS232_CTS
9	RS232_RI

A.4 4DI /4DO & RS-485 (DB15 Type Male) (COM5)

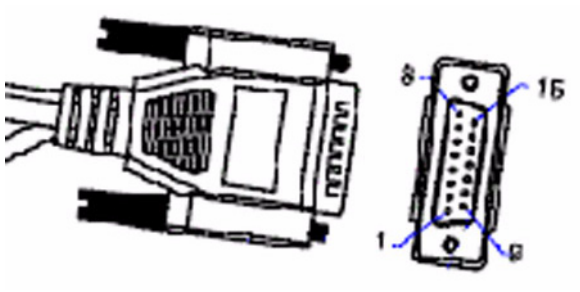


Table A.4: 4DI /4DO & RS-485 (DB15 Type Male) (COM5)

Pin Number	Definition
1	ISO_DI1
2	ISO_DI2
3	ISO_DI3
4	ISO_DI4
5	GND_ISO
9	ISO_DO1
10	ISO_DO2
11	ISO_DO3
12	ISO_DO4
13	RS485+
14	RS485-
15	GND(Drain wire)

A.5 CAN Bus & J1708 (Terminal Block 6P, 5.08mm pitch)

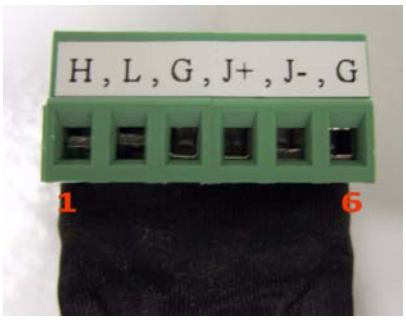


Table A.5: CAN Bus (Terminal Block 6P, 5.08mm Pitch)

Pin Number	Definition
1	CAN_H (H)
2	CAN_L (L)
3	GND (G)
4	J1708+ (J+)
5	J1708- (J-)
6	GND (G)

A.6 Power Extension Connector (Terminal Block 3P, 5.08mm pitch)

Table A.6: Power Extension Connector (Terminal Block 3P, 5.08mm Pitch)

Pin Number	Definition
1	+V12(26AWG)
2	GND(26AWG)
3	+V5(26AWG)

A.7 High Density & Connector Pin List

High Density (50-pin) connector		Jacks & I/O conn/pin	
No.	**Signal Name**	**Function / Conn**	**No.**
1	+V5(26AWG)	Extended Power Terminal Block 3P, 5.08mm pitch	3
2	+V5_USB	USB type A female connector	1
3	GND(Drain wire)		4
4	USB_D+		3
5	USB_D-		2
6	GND(Drain wire)	Video input BNC Connector	2
7	CVBS_IN		1
8	N/A		
9	GND(Drain wire)	Line out jack	
10	LINEOUT_Left		
11	LINEOUT_Right		
12	LINEIN_Right	Line in jack	
13	LINEIN_Left		
14	MICIN	Mic. In jack	
15	GND(Drain wire)	DIO & RS-485 DB15 female	15
16	RS485-		14
17	RS485+		13
18	GND(Drain wire)	CAN Bus & J1708 Terminal Block 6P, 5.08mm pitch connector	6
19	J1708-		5
20	J1708+		4
21	GND(Drain wire)		3
22	CAN_L		2
23	CAN_H		1
24	N/A		
25	N/A		
26	+V12(26AWG)	Extended Power Terminal Block 3P, 5.08mm pitch	1
27	+V12(26AWG)		
28	+V12(26AWG)		
29	GND(26AWG)		2
30	GND(26AWG)		
31	GND(26AWG)		

32	RS232_RI	RS-232 male connector	9
33	RS232_CTS		8
34	RS232_RTS		7
35	RS232_DSR		6
36	GND(Drain wire)		5
37	RS232_DTR		4
38	RS232_TXD#		3
39	RS232_RXD#		2
40	RS232_DCD		1
41	N/A		
42	ISO_DO4	DIO & RS-485 DB15 female connector	12
43	ISO_DO3		11
44	ISO_DO2		10
45	ISO_DO1		9
46	ISO_DI4		4
47	ISO_DI3		3
48	ISO_DI2		2
49	ISO_DI1		1
50	GND_ISO (26AWG)		5

Appendix B

EWF (Enhanced Write Filter) Manager SOP

B.1 EWF (Enhanced Write Filter) Manager SOP

1. Open Start -> All Programs -> Advantech -> Advantech EWF Manager.

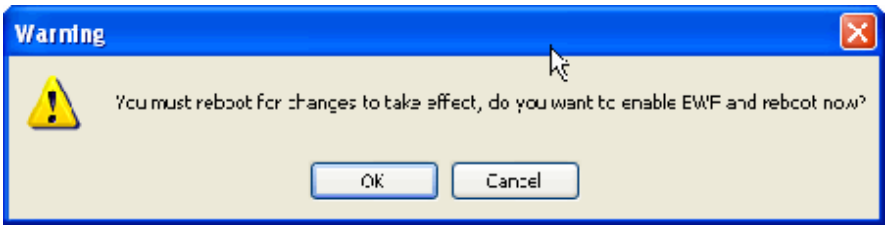
2. The following input screen will be shown.

A. EWF function: If you want to protect your operating system you can use the function to recover your OS after a restart..

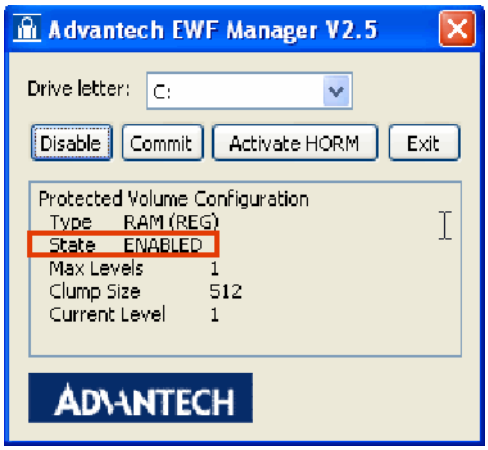
Note! *Please check "C" volume is not protected.*

EWF Enable Method:

1. Click Enable and a reboot the system when prompted.



2. After restart EWF state will be set to "Enable"



3. If you try to create a folder or file and restart the OS, you will discover you can't modify data under the C volume.

Note! *If you want to write data at EWF enable state you can click Commit to write data under C volume.*

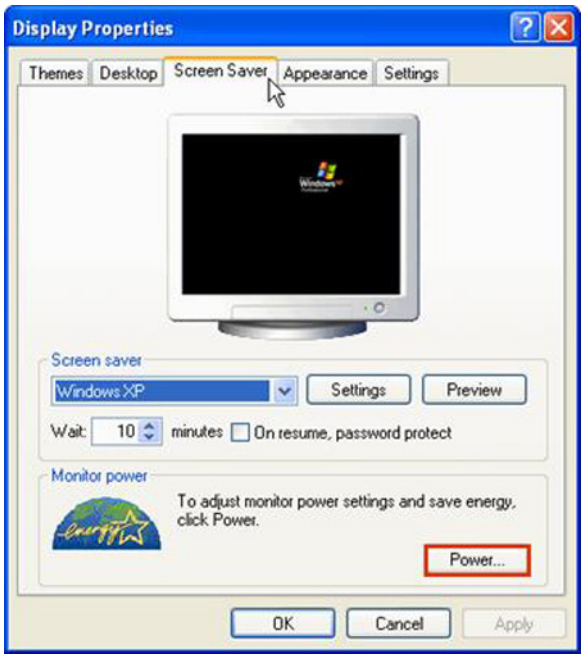
HORM (Hibernate Once and Resume Many): The function can always resume your OS after hibernation, even after a shutdown or crash.

I Before using HORM you should set EWF to the state "disable"

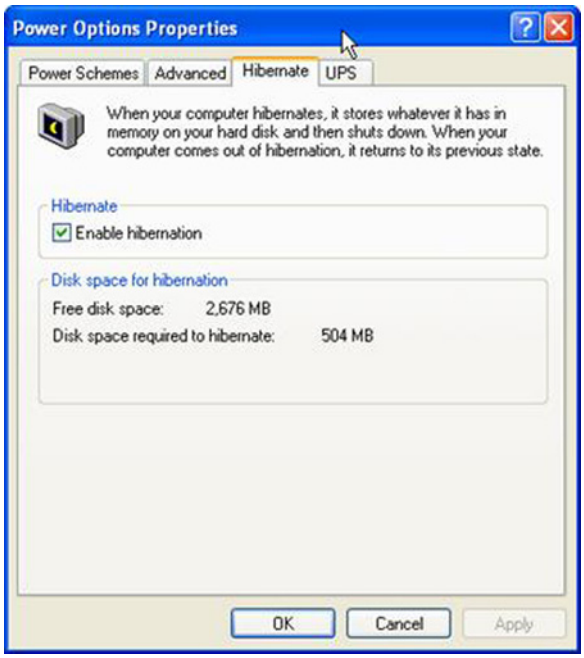
II Check "Enable hibernate"

1. Right-Click on desktop and click "Properties"

2. Choose "Screen Saver" panel and click "Power."

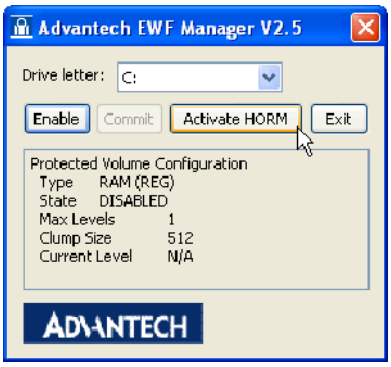


3. Check "Enable hibernate."

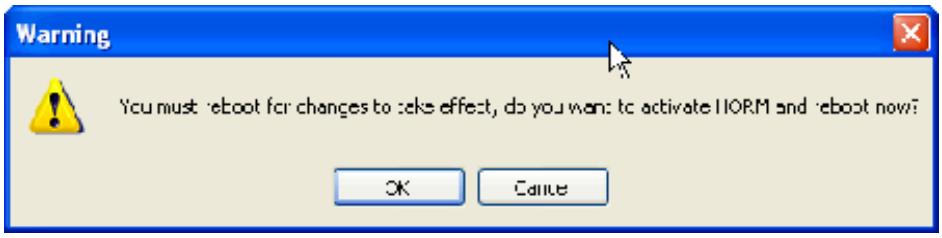

Power Options Properties
Power Schemes
Advanced
Hibernate
UPS
When your computer hibernates, it stores whatever it has in memory on your hard disk and then shuts down. When your computer comes out of hibernation, it returns to its previous state.
Hibernate
Enable hibernation
Disk space for hibernation
Free disk space: 2,676 MB
Disk space required to hibernate: 504 MB
OK
Cancel
Apply

III Activate HORM

1. Open Start -> All Programs -> Advantech -> Advantech EWF Manager.
2. Click "Activate HORM."



3. Chick "OK" to reboot OS.



IV Check "Use the Welcome screen."

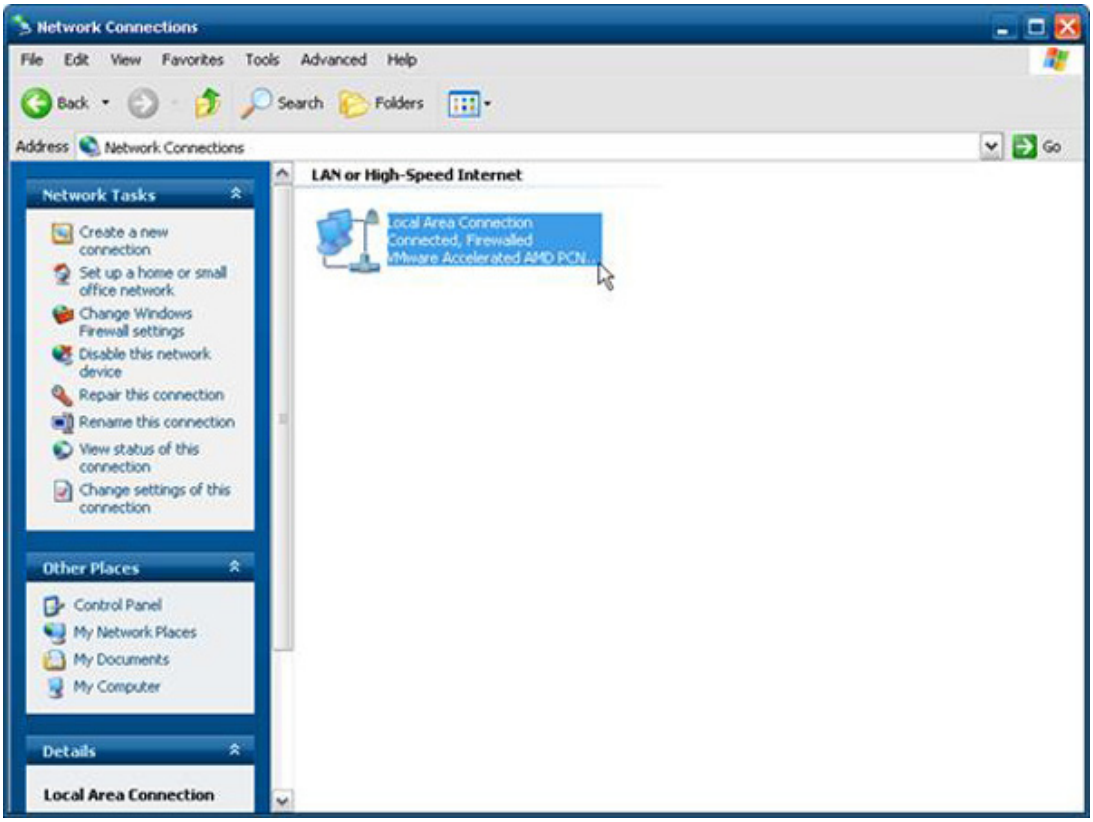
1. Open Start -> Control Panel.

Control Panel
Switch to Classic View
See Also
Windows Update
Help and Support
Other Control Panel Options
Pick a category
Appearance and Themes
Printers and Other Hardware
Network and Internet Connections
User Accounts
Add or Remove Programs
Sounds, Speech, and Audio Devices
Accessibility Options
Performance and Maintenance
Security Center
Connect to the Internet, create a home or small office network, configure network settings to work from home, or change modem, phone, and Internet settings.

2. Click "Network and Internet Connections."

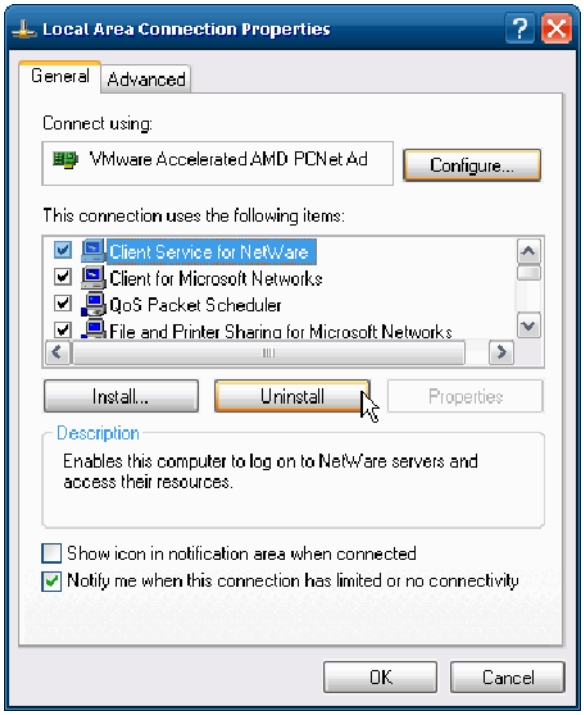
See Also
My Network Places
Printers and Other Hardware
Remote Desktop
Phone and Modem Options
Troubleshooters
Home or Small Office Networking
Internet Explorer
Network Diagnostics
Network and Internet Connections
Pick a task...
Set up or change your Internet connection
Create a connection to the network at your workplace
Set up or change your home or small office network
Set up a wireless network for a home or small office
Change Windows Firewall settings
or pick a Control Panel icon
Internet Options
Network Connections
Network Setup Wizard
Windows Firewall
Wireless Network Setup Wizard
Connects to other computers, netw

3. Click "Network Connection."

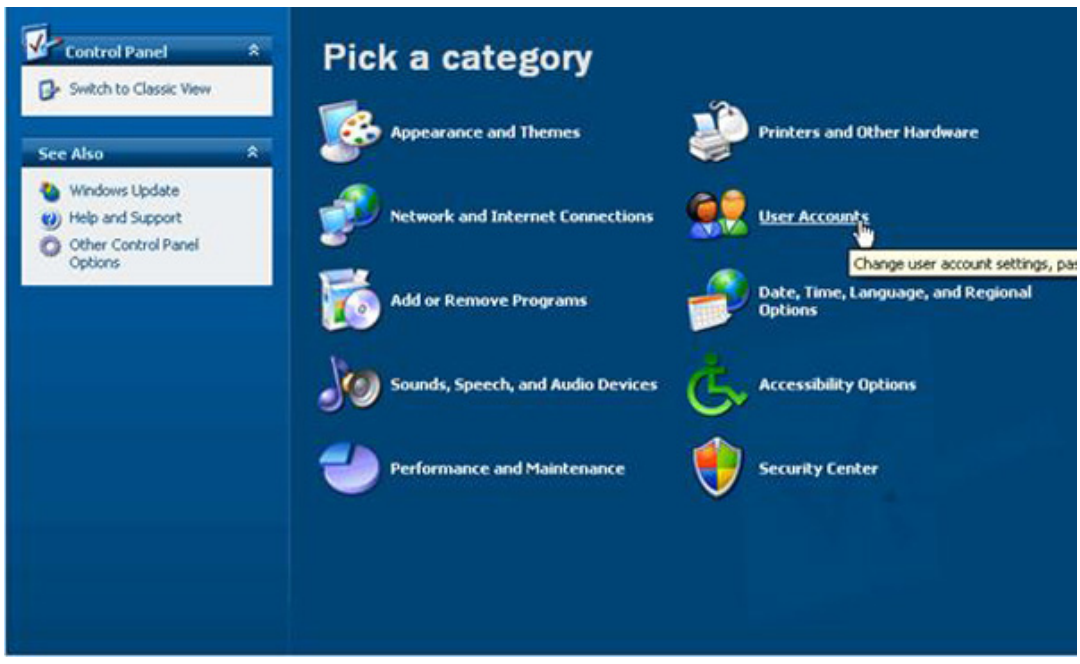


4. Right-Click on "Local Area Connection" and click properties.

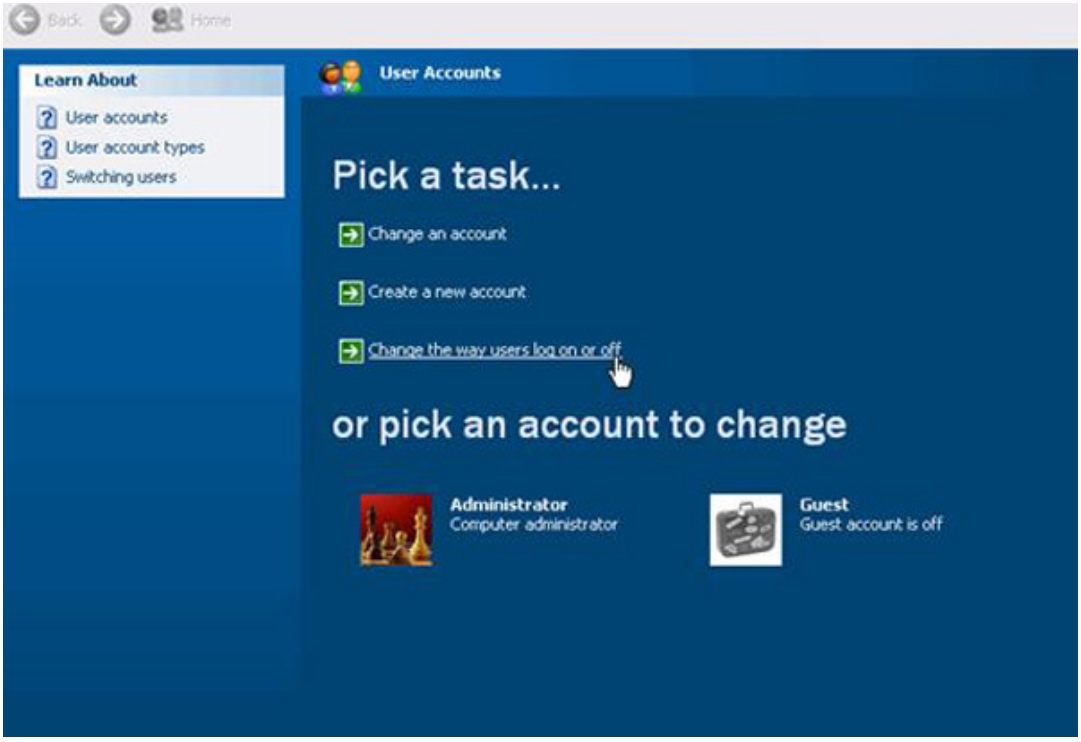
5. Uninstall "Client Service for NetWare."



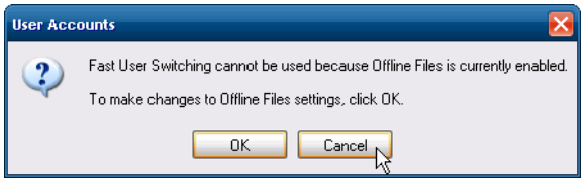
6. Click "Yes" to remove "Client Service for NetWare" and reboot OS.
7. Open Start -> Control Panel.



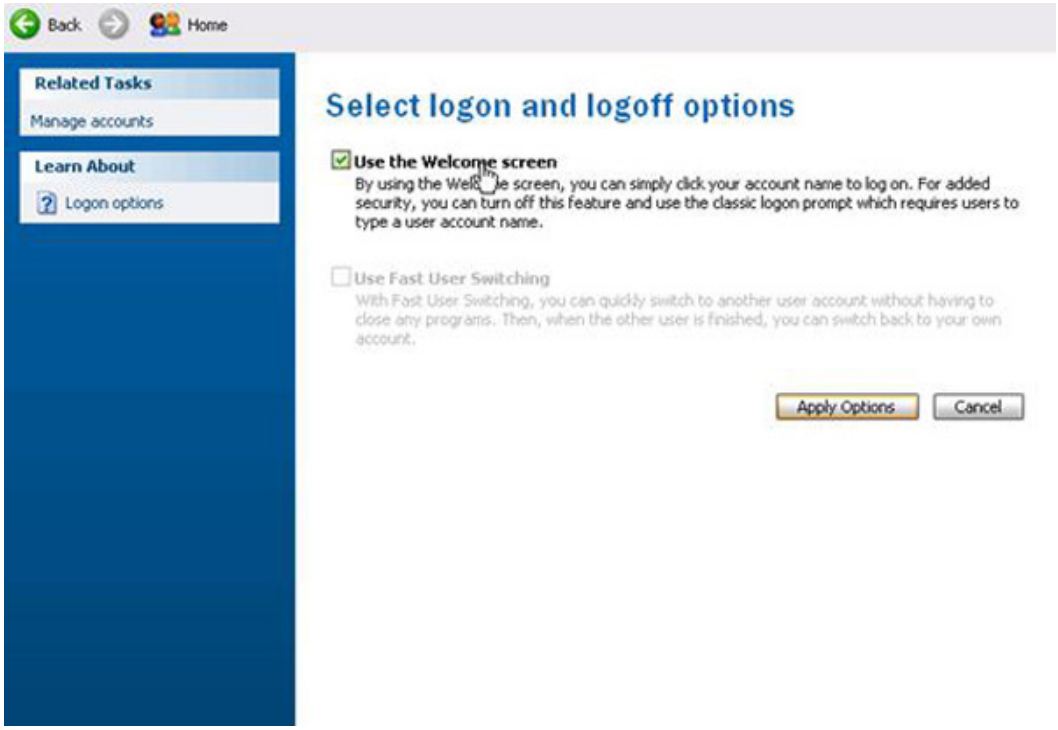
8. Click "User Accounts"



9. Click "Cancel."


User Accounts
Fast User Switching cannot be used because Offline Files is currently enabled.
To make changes to Offline Files settings, click OK.
OK
Cancel

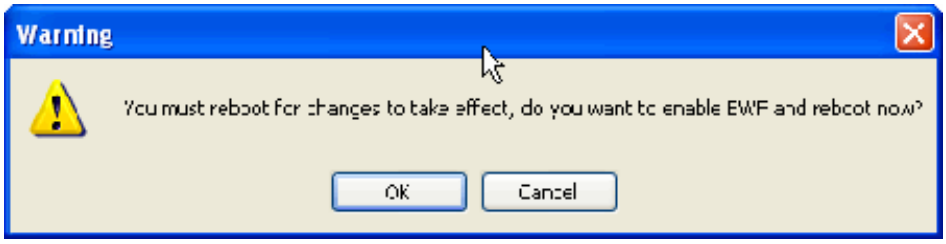
10. Check "Use the Welcome screen" and Click "Apply Options"


Back
Home
Related Tasks
Manage accounts
Learn About
Logon options
Select logon and logoff options
Use the Welcome screen
By using the Welcome screen, you can simply click your account name to log on. For added security, you can turn off this feature and use the classic logon prompt which requires users to type a user account name.
Use Fast User Switching
With Fast User Switching, you can quickly switch to another user account without having to close any programs. Then, when the other user is finished, you can switch back to your own account.
Apply Options
Cancel

V Enable EWF

1. Open Start -> All Programs -> Advantech -> Advantech EWF Manager.
2. Click "Enable."

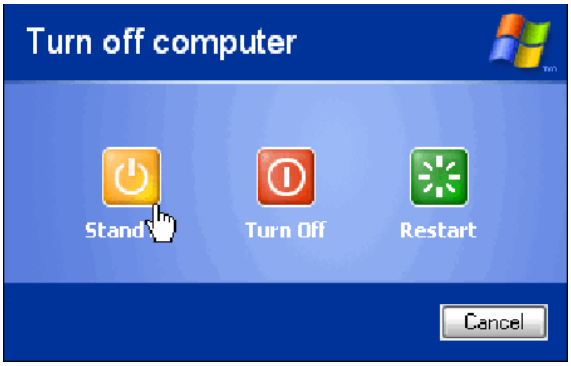
3. Click "OK" to reboot OS.

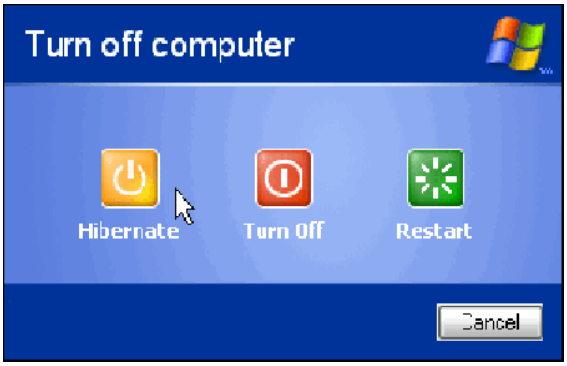


VI Run "Hibernate"

1. Open Start -> Shut Down

2. When you press "Shift" the Standby icon will be replaced with a Hibernate icon.





VII Enable HORM is finished.

VIII If you unplug power cord after resuming system, you will discover the OS will continue its resume state.

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ADVANTECH

www.advantech.com

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